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NEWS IN BRIEF
Hitachi replies to E-series

THREE new low-end mainframes have been announced by Hitachi of Japan in response to IBM's E-series and Fujitsu's M-1XOF series.

The new Hitachi machines are the M-140H, M-150H and M-160H; like the Fujitsu machines they feature 64K memory chips. The 140H offers 1.6 to 1.9 times the power of the IBM 4331, the M-150H is 0.7 to 0.9 times as powerful as the 4341, and the M-160H is 1.1 to 1.4 times the power of the 4341.

Share price leap

UNCONFIRMED reports that Xerox might be preparing a bid for OEM printer specialist Centronics caused a \$4 leap in the Centronics share price to \$46 1/4 last week. Xerox said it was looking for new investments but did not comment on individual cases, and Centronics said it knew no reason for the rise in its shares.

Turnkey system

A TURNKEY system for quantity surveyors, which can also handle routine office processing such as payroll and free forecasting, has been unveiled by Computer Design Systems of Salford, Manchester. Including a 64K Data General Nova, 10-Megabyte disc, and one VDU, it is priced at £17,500.

Testing device

CURRENT and future bubble memory devices, with capacities of up to 65M bits can now be tested with a new automatic test system just introduced by the Xincron Systems Division of Fairchild. Several different memory architectures can be accommodated with the tester.

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COMPUTER WEEKLY

Amdahl shares suspended as 3030 price cuts loom

THE expectation of substantial price cuts on IBM's large-scale 3030 series has caused a major switch back to leasing by customers for large systems.

The trend has hit IBM's profit forecasts for the year, and affected Amdahl even more seriously: the company says that it may only break even in the second quarter, which closes next week, and that profits are expected to be "substantially down" on last year's \$48.2 million net.

The statement also said that sales in the quarter would equal or exceed the company's previous record quarter, but Amdahl shares were temporarily suspended on Wall Street following the announcement. They reopened \$9 lower at just over \$27, and continued to drift down for the rest of last week.

Amdahl has been trying to grow its lease base at a controlled rate, but this market has pre-empted its plans, and observers believe that four-year leases are now running at 40% of total shipments. Sales show up in profit figures immediately, but leases only become profitable towards the end of the term.

Price cuts on the 3030 series are expected because price-performance on these machines is way out of line with IBM's newer products, and main memory is particularly expensive.

As soon as IBM moves on prices, Amdahl will follow suit, and many current leases will be converted to sales as has happened with

90% out of work claims 'nonsense'

WIDESPREAD claims that 90% of the population will have no jobs when new technology has taken its toll are "nonsense", end are based on a misinterpretation of figures supplied to the government Think Tank, according to Professor Tom Stonier, of the Bradford University School of Science and Society.

The figure, widely quoted in the Press, of 10% of the working population being needed to produce all our material needs, comes from the School of Science and Society's submission to the CPRS when it was investigating the impact of the micro, says Stonier. But what he and his staff meant was that 10% would be involved in manufacturing, and the other 90% would be fully employed in the "knowledge industries" such as teaching and the media, and other services including leisure and health.

The swing from manufacturing to information work is already well advanced, Stonier said. In the US now, approaching 60% of workers deal with information rather than objects in their work.

This is Stonier's view of how he would like society to be in a few decades, but he emphasises, "if we don't do it right there

STC shares floated

IN A piece of unfortunate timing, ITT offered 15% of the equity in its STC subsidiary on the London Stock Exchange this week, just as the market turned decidedly bullish following the Budget and a whole series of grim economic indicators.

The issue is still expected to be oversubscribed, and there is likely to be a shortage in the medium term, because ITT does not intend to offer any further shares for sale.

The floatation includes STC's telecommunications interests, as well as ITT Business Systems, ITT Components, ITT Distributors, and Standard Telecommunications Laboratories, which is the spearhead of ITT's efforts in fibre optics. It excludes ITT Semiconductors.

The floatation will give STC a more "British" appearance, and will also enable chairman Ken Corfield to take a more active role in the expected restructuring of the UK telecommunications and electronics industries. He will, for example, be able to issue shares in order to acquire other companies.

IBM's 25M bit bubble memory

CONTINUING its heavy development efforts into bubble memories, IBM has come up with another method of producing the devices. This development should be able to store up to 25M bits, equivalent to 100 pages of the New York telephone directory according to the company, in a one inch square of garnet.

The work centres on what the company calls a "contiguous disc" configuration. These are sawtooth patterned pathways in the garnet used to manufacture bubble memories, and they replace the current approaches of either "T" bar patterns, or chevron patterns.

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Training escapes in Budget cutback

THE government has shown its belief in the importance of computers and computer training by specifically exempting these from the cuts in the Manpower Services Commission programmes announced in the Budget last week.

But the allocation for capital expenditure on computers in universities has been reduced by £600,000, from £13½ million.

At the MSC, both the Threshold scheme, under the Youth Opportunities Programme, and computer courses under TOPS will be "largely unaffected," according to a spokesman, as will TOPS training for technicians in general. Cuts that have to be made can be in administrative costs and not in numbers of students. Threshold has already arranged 1,000 training places for next year.

Professor Frank Sumner of Manchester University, president of the ICS, said he thought the cuts were not an unfair proportion of those in the education budget overall.

Professor Paul Samet, director of University College London Computer Centre, said the cuts "are going to make life tough," but not worse than in other sectors.

Japanese trial

TRIAL production of a 64K bit random access memory chips is due to start shortly at Matsushita Electronics in Japan. Among the first in-house products expected to incorporate the part are a new facsimile machine and/or a new version of its small business computer.

Bubble exchange

A TECHNICAL exchange agreement has been signed by Burroughs and Rockwell International for bubble memory devices. It calls for an immediate and continuing transfer of information between the two companies on certain bubble memory devices.

ADP into France

THE Paris-based bureau, Serig Informatica SA, has been acquired by Automatic Data Processing, a move which takes ADP into the French computer services market. ADP also plans to start selling its network services in France.

Freed from jail

AFTER serving less than three months of a two-year jail sentence for wounding a policeman during the Grunwick dispute, computer operator Richard Hall, 23, of Cricklewood, had his sentence quashed by the Court of Appeal in London on Friday.

Firberg future

THERE has been some speculation about the future of David Firberg, director of the National Computing Centre. His five-year contract comes up for renewal in December. "He is a man who has enjoyed his work," says the NCC and the board.

However, there is no surprise if he moves to another post. He has been a key figure in the NCC's development of the 7100 and 7101 microprocessors.

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Briefing

£500,000 Thorn deal

THE TV rentals subsidiary of Thorn has awarded Univac's minicomputer division a £500,000 contract for V77 minicomputers. Thirteen V77-200 minis are to be installed in accounts offices throughout the UK, which will transmit batched up data daily to a V77-400 at head office in Swindon. There it will be consolidated on tape for onward processing in mainframes.

Each of the 13 regional minis will collect data daily in batch from Transaction Data Systems point-of-sale terminals in the group's 1,200 showrooms.

£90,000 grant

SOFTWARE Sciences has been awarded a grant of over £90,000 under the Software Products Scheme to complete the development of Swift II, an interactive computer-aided design and draughting system for mechanical engineers.

Japanese trial

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BASF enters the desk top market

BASF, best known in the computer industry as a supplier of plug compatible peripherals in IBM mainframe users, has diversified dramatically with a move into the commercial desktop computer market.

Called the 7100, BASF's system was unveiled at the Hannover Fair in April, but it will not be launched in the UK until September.

The 7100 is built in the US by Digilog Systems Inc of Harrisburg, Pennsylvania, which sells it in the US and Canada as the Microterm II.

BASF has signed a three-year contract worth \$7 million with Digilog and one of the conditions imposed is that the two internally mounted floppy disc drives should be 8106 units built by BASF.

Hardware features of the 7100 include an architecture based on dual 230 microprocessors, up to 88K bytes of RAM, a keyboard and a 12 inch VDU, as well as the dual floppy.

Software features include an extended BASIC and an operating system that provides multi-tasking, a file system, a management, and a 2300/2700 emulator for running programs on the 7100 and 7101 IBM sub.

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COMPUTER WEEKLY

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NEB proposes national computer company Commons Technology Committee abolished

RESISTING pressure for an outright sale of its shareholding in companies like ICL and Ferranti, the National Enterprise Board is proposing the flotation of a national computer and electronics holding company in which the NEB would retain a controlling interest.

Industry Minister Sir Keith Joseph wants the NEB to sell assets totalling £100 million this year as part of the government's plans, included in the Budget, to raise a total of £1,000 million by the sale of public assets.

Details of the NEB plan are confidential, but the proposed company would be likely to embrace the Inspec software company, the Inmos semiconductor company, the Nexon office equipment company, as well as the NEB stakes in ICL, Ferranti, DRI and Case. The NEB also owns minority stakes in all the Inspec members, but these are less likely to be included.

The NEB would want to retain a controlling interest in the new holding company, since the whole point of it is to give direction and co-ordination to the evolution of the computer, office and communications industries. At the same time, the flotation would need to raise at least £50 million of the £100 million that the NEB is required to raise. This should be possible since the NEB stake in ICL alone is worth about £38 million at the current share price, and the Ferranti stake considerably more.

Commenting on the proposals, Simon Knoll, of stockbrokers Greene and Company, described them as a non-starter.

THE abolition of the House of Commons Science and Technology Committee, which has resulted from a decision in the House this week to reorganise its committee system, entails the destruction of a great deal of knowledge and experience, and weakens the ability of Parliament to get to grips with such advanced technology as computing, in the view of Ian Lloyd, MP.

The changes are intended to divert more power to the Commons away from the Civil Service, and involve the setting up of new committees to oversee each government department separately. However, Mr Lloyd's view, "Subjects are more important than departments," and it would have been better to strengthen the existing committees.

Users in row over privacy law

SHARP disagreement in the National Computer Users' Forum over how it should respond to the Data Protection Committee's proposals, has led to a compromise reply to the Home Office, giving muted approval to the idea of legislation. Some members, however, are still unhappy about the form the reply eventually took.

The dissenters, including some of the commercial trade associations, were unhappy with the idea of compulsion over computer privacy, preferring voluntary codes of practice.



GW's new editor

JOHN KAVANAGH has been appointed editor of Computer Weekly and will join the paper in July. An experienced programmer, Kavanagh first joined CW in 1974 and was appointed an assistant editor in 1978. In December 1977 he moved to ICL as a publicity officer, returning to IPC Business Press in 1978 as CW's editor. He is married with two young daughters.

Free trial of fax service

A FREE trial of Intelpost, a high-speed facsimile service between London and New York and Washington, is due to start next month. Operated in conjunction with Expresspost in London, it will provide door-to-door "telex-fax" mail in less than 2½ hours.

Customers will be able to phone Expresspost for their documents to be picked up and taken to the Post Office's fax centre. Alternatively, there will be an office in the City where documents can be handed in. Each A4 page will be transmitted in less than one minute.

After the one-month trial period is over, the PO will charge £4 for the first A4 page and £2 for subsequent pages.

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French pull the plug on Prestel

A HIGHLY successful demonstration of the British Post Office Prestel service came to an abrupt end after the first day of a three-day international exhibition in Paris last month, when all the lines on the Post Office stand suddenly went down.

The cause of the failure has been reported in France to have been "sabotage" by French telecommunications authorities, while other sources have said that the British demonstration ended soon after the French Minister of Telecommunications, M. Norbert Segard, had toured the show and became extremely annoyed that Prestel's French rival, Didiol, on a nearby stand, was not working.

The exhibition was Teleforum 79, and although it was held at the headquarters of the French Postal and Telecommunications administration in the Avenue de Segur, Paris, the French authorities could not restore the lines. Unable to continue operations, the Prestel team packed up and came home.

The event was sponsored by the EEC, Unesco and the International Council for Computer Communications.

The Prestel exhibit had been set up the week before and was working perfectly on the first day of the exhibition, attracting a great deal of interest. But on the morning of the second day, both telephone lines on the stand were dead, cutting off the demonstration set from its database in London. The French PTT engineer who appeared in answer to the service call, disappeared saying he would be back in a few minutes — and was not seen again.

At lunch time the exhibition organisers, AFCEP, Association Francaise pour la Cybernetique Economique at Technique, brought one of its administrative telephones to the stand to provide a link. However, less than two hours later that too went dead. As on the first two lines even the dial tone was lost, although exhibitors all around

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Downtime

by Chad

Art at the CA—I think

year's Degree Show at Royal College of Art presents its usual crop of interesting exhibits. As expected, new technology was present in the Industrial section, though why was one large display containing a single integrated circuit all on its own, no explanation, I have

a student proudly showed me his computerised domestic information can be used for short, was a system for to keep tabs on power consumption, phone, and so on. This

of flashing lights screens, and looked familiar. "Ah," he said, "you see I've designed a bedroom wall-paper, sheets, and pyjamas, all covered with little sheep. Mind you, ha overlooked the fact that when you are trying to get to sleep it is dark, your eyes are closed, so how can you see the sheep?"

There was a lovely paper-weight in the form of a crumpled-up Final Demand telephone bill. (It was printed on sheet tin with a lead weight inside.) Of course if the computer strike doesn't get resolved we may never see a phone bill again, so these will be collectors' items!

Lack of truss Britain's future?

you have been looking for of the new spirit of enterprise in Britain spawned by Geoffrey's wonderful yet, this notice I have loved with interest, you: three-day Enterprise '79 scheme, organised by the British Institute of Management, which was to have taken place on 26 to 28 June, been cancelled owing to of support."

in sure everyone is much busy being enterprising have time for conferences, must be the explanation.

I noted that he expects pluggable ROMs in a few years time to look like small torch batteries. Presumably he thinks no pins will be needed as the information will be read out of them by osmosis. Anyway, I hope my CEDRIC will stop short, never to go again, on the day I die.

There was a wall display on Robotics. "Cybermen" "blonemen" "msn/computer symbiosis" "man/machine symbiosis" (subtle distinction here) "man-enhancement". The buzzwords fairly flew, and the Fog Factor reached peasant proportions.

The stuff in the rest of the show was an amazing as ever. One student had designed for insomniacs a set of matching bedroom wall-paper, sheets, and pyjamas, all covered with little sheep. Mind you, ha overlooked the fact that when you are trying to get to sleep it is dark, your eyes are closed, so how can you see the sheep?

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WHAT with the new government's lack of enthusiasm for the NEB and all its works, it seems that around the word processing business Naxos is beginning to be known as "Butter, however, is not involved; by the connection via Logica with W.P. at Unilever, it's merging in instead.

EuroIFIP 79 will present 100 speakers from over 20 countries at the Wembley Conference Centre on September 25-28.

It is more than 10 years since IFIP (the International Federation for Information Processing) had a similar big conference and exhibition in Europe. The co-ordinating body in the UK is the SCS and there are programme area chairmen in Paris, Copenhagen, Moscow, Munich and

Dresden. There will be nine main sessions, each on a special theme.

A topic that has been neglected in the past but which is proving more urgent nowadays is that of Computers in Society. The director of the National Computing Centre, David Fimberg, is programme area chairman for this session and has gathered speakers on such subjects as What the world thinks; Will there be more

work, less work or different work?

The article below presents extracts from papers to be given by Ian Benson of the AUEW's TASS (Technical, Administrative and Supervisory Section) and by Karl Thorsen and Ama Maus of the Norwegian Computing Centre in Oslo. The EuroIFIP 79 office is Box 48, Cleveland Road, Uxbridge, Middlesex UB8 2DD. Tel: 0955 31118.

EuroIFIP to hear of the era of the 'data shop steward'

The paper to be presented by KARI THORSEN and ARNE MAUS of the Norwegian Computing Centre, Oslo, concentrates on new problems facing trade unions, posed by technological changes. They write:

THE introduction of information technology has created problems on several levels. In the computerised office, perhaps the most visible changes are found in the working conditions. At the same time, the role of the trade union is undergoing changes.

The new role is created by a shift in the working relationships between unions and the employers, from one of negotiation to one of co-operation. In Norway, this has been brought about by a data agreement. The traditional model for solving conflicts by negotiation has not been abandoned, but the unions' right to co-operate has been extended to the realm of planning and designing data systems.

The data agreement between the Norwegian TUC and the Employers' Confederation was first signed in 1976 and revised in 1977. The agreement grants the unions the right to be informed about plans for new data systems as early as possible, and to appoint a new representative who is virtually the "data shop steward." The fact that this is a union, and not a management appointment, means that there is now a shift to the end user of a computer system, which can lead to different demands on system design.

One of the research studies recently carried out by the Norwegian Computing Centre has been into the working conditions associated with data terminals. We have found, first of all, that the ergonomic aspects have proved a problem which must be taken seriously. The use of CRT screens is accompanied by eye complaints such as sore eyes, tiredness and blurred vision.

Muscular pains, particularly in the neck, shoulders, back and wrists, are common, partly because the ergonomic design of the work station is bad and partly because workers often have to spend too much time in front of the screen.

The question arises: who is going to work in the computerised office? People with bifocal lenses may have trouble working with the screen, as may people over the age of 40 or 50, and it has been reported that the use of contact lenses may increase eye problems for such workers. People prone to migraine may get worse attacks.

Have we to say that the computerised office can only be manned by young, healthy people with perfect eyesight and with a good physical constitution?

Such a selection principle is not only totally unacceptable, but it is illegal, according to the Working Environment Act in Norway. The only possible solution is to try out alternative ways of organising the work.

Dealing with this kind of problem is a complicated process, where research plays only a small part. Most of the work has to be done by the trade unions themselves, by finding ways of bringing to bear the laws and regulations that already exist.

A trade union view on planning for the computer-dominated future will be given by Ian Benson, divisional organiser of TASS, AUEW.

THE growing debate within the trade union movement, the media and the political parties arises from the qualitative change in the organisation of production brought about by the development of low-cost computer-based products.

Within any advanced industrial country, the organisation of production is a function of capital and manpower resources

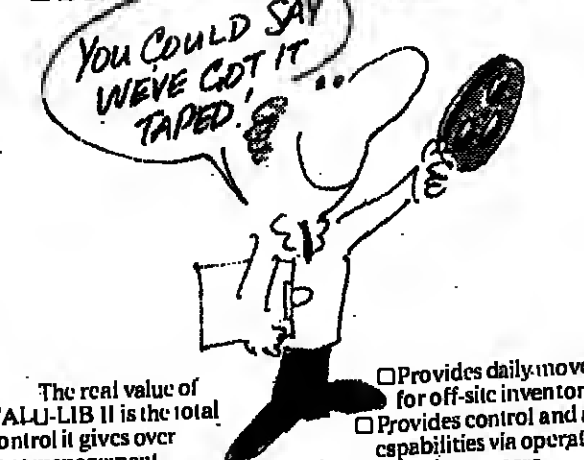
and the level of scientific and technical expertise. In all these countries, these factors have combined to produce a rapid growth in the production of electronics-based goods far in excess of the growth rate of the economy as a whole.

While public attention has been concentrated on the development of consumer and military products, a far more significant change has been taking place in the means of production themselves. The utilisation of computer-controlled machine tools in Britain, for example, grew by 138% between 1971-76, while the number of computers in use in manufacturing rose by 336% from 1969-75. These developments make it possible to change the bulk of manufacturing from a batch to a continuous process, with potentially damaging consequences for employees and small companies.

Existing production processes deprecate at a far slower rate than the development of the technology. A primary constraint, therefore, on the development of the technology lies in the level of skill of available labour. The slow take-up of machine tools has recently been put down to "management considering that the resources of qualified engineers are insufficient."

The securing of a higher level of qualifications, on the part of new entrants to the labour market, to maintain the process of automation requires a massive removal of class barriers to higher education. These barriers, according to the UK Conference of University Administrators, will be removed as much by policies in the fields of housing, health and social services generally, as by purely educational policies. This, by the way, is not specifically a British problem, but is common to Western Europe as a whole.

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MICHIE'S PRIVATEVIEW

What is the connection between robotics and expert systems?



IN this column two themes have appeared and re-appeared. One is robotics and the other is expert systems. Are they related?

As with the relation between steam locomotives and cars, it depends on whom you ask. When the question is viewed from boardroom level, the response is likely to be "Absolutely no connection!"

Moreover the man who taps carriage wheels and the man who tests tyre alignments will join forces to say the same. Nor is it the slightest use to talk of the Carnot cycle or the physics of frictional losses.

Boardroom and workshop have been innumerable that clever talk does not butter the nation's parsnips.

There is one kind of person who sees the connection instantly and sees it as important. It is the R&D engineer of transport technology. But who ever listened to engineers except in war-time?

So with robotics. Those who wish to see the development of an "expert systems" approach to robotics tend to be viewed as diversionary. "Haven't we got enough to do getting reasonable performance out of dumb robots without complicating the issue with intelligence?"

My answer is to conjure up the wild-eyed proposal which must at some definite past moment have come forward for the first time: how about an internal combustion approach to railway transport? "Oh, rats! Haven't we got enough to do getting reasonable performance out of steam without complicating the issue with diesel?"

rial robot of the future, whether anchored to a work station or free-roving.

A needless gap has opened up in this country, or perhaps it always existed, between our excellent and devoted production engineers, such as renowned groups as Wilfred Heginbotham's at Nottingham University, and on the other side those whose primary interests

arrogance — and also proponents of today's Advanced Passenger Train would say un-informed technical judgment.

All that is needed is the mutual respect by which fences are ordinarily mended and minded.

If there is room for a production engineering approach to robotics, then let the possibility be conceded that there is room for an expert systems approach as well, along with vitally needed contributions from software technologists, hardware designers, microelectronics systems specialists and programming theorists.

Interdisciplinary teams may be unfashionable in the staid world of peace-time science. But the technological struggle that lies ahead may not be easy to win if everyone insists on dressing for dinner.

What new kinds of programming systems are required in expert systems work?

For those wishing to find out, it is (just) not too late to register for the AISB summer school on expert systems meeting in two weeks' time in Edinburgh.

The software methodology of expert systems will be the subject of wide-ranging tutorial review, using case studies from successful applications.

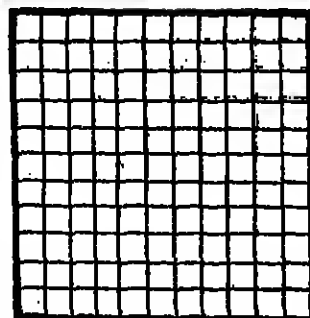
In the final technical session Dr P. J. Hayes of Essex University will speak on the design of the sort of "knowledge pack" which, if loaded into a robot's memory, could confer the kinds of aptitudes listed above.

He will be followed by John McCarthy, of Stanford University, discussing the formal basis for reasoning about states of knowledge. The summer school will close with a discussion on social implications, moderated by the Oxford historian Michael Hurst.

Those who cannot attend will be able to order the proceedings in book form, "Expert Systems in the Microelectronic Age", from the Edinburgh University Press.

Donald Michie

Puzzler



THIS week's problem is to arrange 15 counters on this 11x11 board, in such a way that there are six separate lines of five counters in a line. A "line" does not necessarily have to be positioned along an exact horizontal, vertical or diagonal row of squares. For example, counters placed at a Knight's move distance from each other are also allowed for the purpose of achieving six lines.

See page 81 for solution.

SOFTWARE FILE-1

Mathematica buys in TP monitor for teaming with Ramis

A LITTLE-KNOWN DOS and DOS/VS teleprocessing monitor, GbaSwift, has been bought outright by Mathematica Products Group, primarily to complement its database management system and non-procedural language Ramis II.

Ramis thus becomes the latest in a line of proprietary DBMS packages to be explicitly teamed with a TP monitor, joining such products as Total (Environ/1), Adabas (Com-plete) and IDMS (IDMS-DC).

Such a pairing is generally seen as opening the way to improved DB/DC efficiency, specifically by permitting the elimination of duplicated functions such as logging from the joint architecture.

Although Mathematica has not yet announced a development programme to integrate the two products in this way, it sees the combination of the two products as encouraging smaller installations to use the Ramis system, making a degree of rationalisation highly likely in the future.

The company acquired the rights to GbaSwift, now to be known as MpgSwift, from its developer, GBA International, of Corte Madera, California. Included in the deal were two other GBA system products, DES (Data Entry Subsystem) and TIPS (Terminal Interactive Programming Subsystem).

All three products will continue to be sold as stand-alone software by their new owner. MpgSwift already has around 100 users, primarily in the US, and last year came close to being included in Datapro's Software Honor Roll.

Its most frequently cited advantages are efficiency, ease of use, and ease of installation and its scores in these and other categories left it just three-tenths of a point short of Honor Roll status.

A multi-threading monitor, it offers interfaces to a number of other database systems apart from Ramis — notably IDMS, Total, and Datacom/DB — and also supports the majority of IBM access methods.

Mathematica's acquisition of the package will give it an interesting opportunity in the potentially enormous market for DB/DC systems on IBM's 4300 series.

Since the announcement of the 4300, there has been speculation that the limited rebuilding of IBM's system software would create opportunities for independent suppliers able to offer comparable facilities at better price/performance ratios.

The combination of Ramis II and MpgSwift could in this context prove an attractive alternative to a System 1/PO/E including Cics and DL/I.

IBM System 34 utility

A UTILITY to help users of IBM System 34 to reformat disc files for the System 8 word processor is being developed by Orion Software, of Olfay, West Yorkshire. The software is designed to make selected System 34 data available for such word processing applications as personalised mail shots, promotions, and product and price lists.

The package is essentially a generator which customises a skeleton RPG II reformatting program under the control of parameters entered interactively by the user. It includes a BSCA communications program for transferring the reformatted file in Ebcidic mode.

Among the financial accounting applications available are sales, purchase, nominal, and contract ledger while other

modules are available for payroll, invoicing, order processing, and stock control.

Customised largely by the selection of options listed as packages are written in Cobol and will also run on the full range of Data General Nova and Eclipse systems.

SOFT BITS

Online ledger for ICL 2903s

AN ONLINE ledger system has been developed for the ICL 2903/4 by Systemsolve (Computer Services) of Sunbury. Called Ledgersolve, the package is written in Cobol and runs under MTS.

The complete system caters for sales, purchase, and nominal ledger functions and is priced at £10,000. Alternatively, the sales and nominal ledger may be purchased alone for £3,500 while the purchase ledger on its own costs £6,500. The software may also be leased or rented.

NEARLY one out of every six MVS users in the UK has ordered Boole & Babbage's MVS performance measurement package CMF following its launch earlier this year by CAP-PP (Software File, March 8). The first two users are British Airways and the Royal Bank of Scotland while the system has been ordered by six other large users, giving it eight out of the 50 UK MVS installations.

THE Computer Aided Design Centre has entered into a joint project with ICI Organics Division to develop software for the design, analysis and engineering of process vessels. The programs, the first of which are due to be released this winter, are designed to meet the requirements of British Standard 5500.

A STANDARD product costing module has been added by Hewlett-Packard to its MFG/3000 production control system. The new module, SPC/3000, uses material, labour, and overhead costs to calculate the exact cost of manufactured items and is priced at £2,100 plus £36 per month.

TO assist with the development of products written in its decision table-based language RPL, Filetab Support Services has installed a Gamma Olympic microcomputer.

THE Nalco Insurance Association has commissioned Lonsdale Systems, of Croydon, to develop a new life insurance system for its ICL 2904.

SOFTWARE FILE-2

ADR grasps the reins of its European operation

A SIGNIFICANT expansion of its continental European business is being planned by Applied Data Research now that it has grasped the reins of this five operating companies acquired from CAP-PP earlier this year (CW, March 28).

In the five countries in which it is now trading directly, ADR has budgeted for a first year turnover of just over £2 million, representing a growth of about one-third over CAP's results last year.

It is also planning a substantial expansion in staff, almost doubling the 30-odd total that it inherited from CAP.

Not all of this additional effort, though, will be dedicated to selling, as ADR has also to establish a new European headquarters and technical support centre. Both of these will be in Zurich.

One almost certain consequence of ADR's entry into Europe will be a broadening of the range of its products actively marketed. Most of the efforts of its agents and distributors have concentrated on the highly successful system software tools, such as The Librarian, Roscoe, and Volle.

The company now intends to re-launch a number of packages which have been largely ignored in Europe, partly because of their relatively greater implications for users installing them and the greater marketing and support effort therefore required.

At the top of this list is the Cobol pre-processor system MetaCobol, whose 500+ worldwide users include only a small number outside the US. In Swit-

zerland, for example, MetaCobol accounts for just five out of the total of 148 ADR products installed.

MetaCobol was substantially revamped by the company earlier this year (Software File, April 28) and is thought to have considerable potential.

Other products planned for re-launch include ASC, Automated System Charter, which produces system level documentation, and Online ETC, the document and word processing system.

ADR is also likely to give a fresh push to the Datacom DB/DC range it acquired last year from Insys (Software File, September 28, 1978), a range of products for which it paid around £1.25 million and to which it attaches great importance.

The company has had a disappointing start with these products in the US, the operation incurring losses of nearly \$1 million in the first quarter of this year. It attributes much of this, though, to inevitable start-up costs and the general uncertainty of the market following the 4300 series launch and is expecting to record a net profit from this division for the year as a whole.

The Datacom range was already being sold in Europe by an Insys associated company in Germany and this has now been incorporated into ADR Europe as ADR/Insys GmbH. Since it was founded in September 1977, this company has installed some seven copies of Datacom/DB and 27 products in all.

ADR has no intention of establishing a professional services division in Europe, an operation

which earned it around 15% of its total 1978 revenue of \$22.4 million.

But it may broaden its offering on the software front to include some application software, the prime candidate here being the financial modelling system Empire, which was originally developed for mainframe use, but has now been made available also on a number of DEC minicomputers.

The company is also likely to expand its range of IBM systems software, the first product scheduled to appear being a DOS version of its popular OS performance monitor Look.

There are also extensions in ACF/Viam Release 3, ACF/Tcam Version 2 Release 3, and in Network Terminal Option, NTO, Release 2; NTO enables 2740, 2741 and Teletype-compatible devices to make full use of the facilities of an SNA network.

ACF introduced the possibility of multiple hosts on an SNA network, but users were essentially limited to establishing inter-connected hierarchical star networks around each host.

The new release enables ring networks to be built, and a user at a terminal attached to any 3705 on such a network can access any application under Viam or Tcam on any of the host 370, 303X or 4300 mainframes on the network.

Remote 3705s can now be connected in tandem; each NCP remains logically "owned" by a single host, but ownership can be transferred easily from one host to another up to a total of eight hosts.

This is an attractive facility where a host goes down, or on a multinational network when an intermediate host between two others goes off air; ownership of the NCP attached to that host can be transferred to one of the others, becoming an extension of the new host's NCP.

Latest release of IBM's Systems Network Architecture

THE ability to configure almost any shape of SNA network is the highlight of IBM's latest release of the major SNA software packages. The extended software is predominantly in Release 3 of the Network Control Program, ACF/NCP/VS, which runs in the 3705 SNA communications controller, and requires an increase in memory over Release 2.

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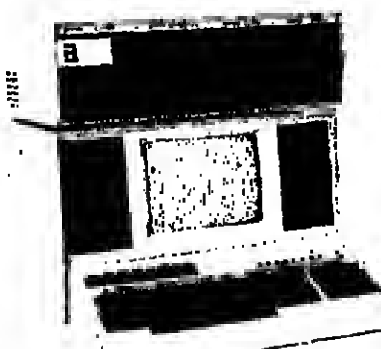
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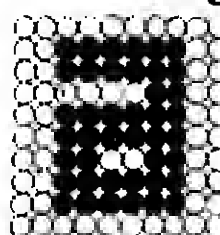


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PROGRAMMER NOTES

The VIP cometh...

IF any VIP, local dignitary or, indeed, the managing director should deign to visit the computer installation programmers are faced with a job which is far removed from the mundane and practical problems of general programming.

When some event prompts the arrival of such strangers in the computer room, both they and everyone else expect something very impressive or something completely boring.

As most people know, the computer itself sitting dormant does little to fire the imagination, no matter how many plants have been tastefully arranged around it, or how many smart young operators in clean white overalls are lined up in front of it.

The programmer, then, faces a challenging task.

Demonstration programs used by the computer manufacturers for pre-sales and announcements are a different matter. Their aim is to show the system, the machine and the company performing at their absolute best. Efficiency, accuracy and smooth presentation are the priorities. In these circumstances a certain knowledge and a great deal of interest can be presumed.

A program to impress a passing visitor is essentially different. On the surface it is much simpler but in practice several problems arise with which the programmer never usually contends.

Firstly, managing directors expect a different performance than, say, the Lady Maydew or the City of London.

a local personality. Holding the interest of such visitors is the most important and difficult problem.

The most successful demonstrations show, in as short a time as possible, the computer executing a simple program, for example an online order entry program. They demonstrate the entering of information, processing and the printing out of an easily understandable document, which can be read and appreciated by everyone.

Some occasions call for a more light-hearted touch. Most programmers are acquainted with the delights of writing programs to execute pictures of the Queen, Snoopy, Concorde or whatever might interest them.

On the other hand, a managing director visiting a new installation for the first time is not going to be delighted at the sight of a group of operators and programmers, eagerly using up reams of computer paper to print pictures of Raquel Welch and Fred Flintstone, with cries of "Look what we can do!"

But the company logo, the date and similar information heading each sheet of printout as it finishes the run, demonstrate both efficiency and ingenuity.

The trick is simplicity aided by a few allowable gimmicks. But don't get carried away. Visitors who have carried about the power and impact of the new technology will be sadly baffled when confronted by a daunting complex of machinery, which sings "For he's a jolly good fellow" as they enter the computer room.

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MEMOREX

OP SPOT

By Bernard Allen

A fiver for your hints

OP SPOT should consider the operating systems of all manufacturers rather than concentrating on those of IBM and ICL, says an operator from Edgware, North London.

He writes, "From week to week, you discuss the merits (or otherwise) of IBM and ICL operating systems but never touch upon those of Honeywell, for example."

"Honeywell probably have the third largest number of sites in the UK. So come on, what about them?"

I welcome hints on Honeywell and all other operating systems, and will award £5 for each one published in this column. Please include your name and address, and a telephone number on which you may be contacted during the daytime.

'Stand up for your rights and insist upon more training'

ANOY Foers of British Aerospace is obviously very concerned about the level of training given to operations staff.

In a letter to Op Spot, he criticised manufacturers for running "inflexible" courses, and suggested that sites run their own or make use of those held at other installations.

Now Foers writes again to put forward further views on the subject and outline a training scheme for medium to large installations.

"While it is evident that most employers give adequate training to the trainee, further education after six months is often inadequate," he says.

According to Foers, training should be considered an ongoing matter, otherwise staff might "experience a feeling of staleness and boredom."



Andy Foers

He goes on, "Sites often forget that intelligent people need stimulation and challenge. It is important that they are involved

in company affairs."

Staff with six months' or so experience should be "taken out of the confines of the computer room" and introduced to the workings of other areas.

"The operators should spend some time in other sections of the systems department. In fact, they should demand to do this."

He urges operations staff to stand up for their rights and insist upon the right training.

"Operators should not accept excuses from managers who say that they (the operators) cannot be spared or that the other departments are too busy."

Under the training scheme outlined by Foers, operations staff with six to 12 months' experience should spend time in the following sections:

Data Control. By spending four half-day sessions in this area, they will learn something

about scheduling, user liaison, and the preparation and distribution of work.

Communications. Two half-day sessions in this area will give them an insight into hardware and software use and the use of terminals.

Systems and Programming. Foers stresses that communications between operations and these two areas is vital. With that in mind, he suggests that operators get to know all the staff in these sections.

According to Foers, staff with a year to 18 months' experience should continue to broaden their

knowledge by learning about user departments within the organisation.

They should be introduced to departments, such as purchasing, sales and stores, in order to learn about their problems and requirements.

In his opinion, staff with 18 months' plus experience should be allowed to visit other sites within the company.

In addition, they should be allowed to sit in on meetings about system development or, indeed, anything else where an operator's viewpoint would be valuable.

HINT OF THE WEEK

Segmenting output on DOS/POWER queues

MANIPULATING DOS/POWER output queues is the subject of this week's hint from John O'Reilly, chief operator at Astral Computer Services, a bureau in the City of London.

According to O'Reilly, dividing output listings into segments of, say, 50 pages is quite a common practice at DOS/POWER sites. Achieved by means of the RBS parameter of the POWER List statement, it results in output being transferred to the output queue while the job is still running on the system.

This is very useful in the case of long-running jobs which produce a lot of output, particularly if the site has only one printer.

However, such segments have the same job and number which, effectively, means their relative positions on the queue cannot be altered.

This is rather inconvenient at times, such as when, say, the fifth segment on the queue is required first.

Now the conventional method of achieving this is to flush — F OOE,HOLO — the first four jobs while they are actually being printed.

The "hold" parameter causes the job to be returned to the output-queue and remain there until the operator takes further action on it. If the "hold" parameter is left out of the command, the segment will be lost, and that is the disadvantage of this method.

An alternative is the use of "phantom" printers — devices which the system will start even though it doesn't have them on its configuration.

To do this the operator might enter the following commands:

S LST,01E
S LST,02E

IR401	LIST	QUEUE	P D C	PAGES	CC	FORM
IR401	ER030	10718	3 D A	50	1	1PT
IR401	ER030	10718	3 D A	50	1	1PT
IR401	ER030	10718	3 D A	50	1	1PT
IR401	ER030	10718	3 D A	50	1	1PT
IR401	ER030	10718	3 D A	50	1	1PT

The above shows five output segments which all belong to one job. By means of "phantom" printers, the operator can cause the one in fifth position on the queue to be printed first.

IBM OS Cancel—with care

"If you have to cancel an IBM OS job at output stage, be sure to stop the printer first. Otherwise you might get rid of the wrong listing."

Thus Colin O'Keefe, assistant operations officer at British Airways in London, responds to an Op Spot piece on the use of the IBM OS Cancel command.

The use of Cancel outlined are probably known to most experienced IBM operators, but should be of interest to trainees and non-IBM staff, he adds.



John O'Reilly

S LST,03E
S LST,04E
S LST,00E

Printers 01E to 04E are the phantoms which don't exist on the system configuration, and 00E is the real device.

As each phantom is started, it will take the job currently at the top of the output queue, and the system will issue a forms alignment message. Ordinarily, the operator would reply "go" to the message, but in this instance he leaves it unanswered.

When all the phantoms have been started, the fifth segment will be the first in line for printing and is therefore allocated to printer 00E. In this case, the operator replies "go" to the line-up message and the segment is printed.

After that, the operator suspends all the phantoms and the system returns to normal.

Should the operator inadvertently reply "go" to a phantom line-up message, the system will terminate the device immediately, according to O'Reilly.

NEW TERMINALS FROM DIGITAL EQUIPMENT

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PDT-11 Intelligent terminals. PDT-11 technology. Can be programmed, clustered, equipped with mass storage and used in synchronous or asynchronous networks. Shown is PDT-11/150 with floppy disk drive, intelligence and memory. Use with any keyboard terminal. Not shown: PDT-11/130 (with memory and tape storage). PDT-11/110 (intelligent terminal with memory), both incorporating VT-100VTR/keyboard features.

LA34. Tabletop OECwriter, 300 baud 30 cps. Choice of 4 compressed fonts (10 to inch up to 16.5). Cartridge ribbon Roll feed. Numeric pad option. Smaller and lighter than most standard typewriters and just as easy to operate.

LA120. High-performance terminal. Print speed 180 cps, baud rate selectable from 50 to 9,600 baud. (More than 45 user-selectable features relating to printing and formatting). Choice of eight compressed fonts (from 5.5 to 16.5 to inch). Font size, tabs margin and form length can be set at keyboard. Stored for easy recall. Automatic self-test.

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THE SEMINAR PROGRAMME

The seminar is intended for engineers and managers who require a complete insight into the LSI-11/23, both from a hardware and a software point of view. Papers will be presented by the Digital Equipment Corporation and Rapid Recall.

09.30 Introduction
09.45 The evolution of the PDP-11 and LSI-11 family
10.30 Break for morning coffee
11.00 How the LSI-11/23 fits into the overall microcomputer spectrum
11.30 LSI Software - the issues and the products
12.30 Lunch
13.45 LSI-11/23 - architecture and design
14.45 Support hardware for the LSI-11/23
15.30 Break for afternoon tea
16.00 How to develop an LSI-11/23 based system
16.30 LSI-11/23 - pricing and availability
16.45 Question and answer session

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PEOPLE AND EVENTS

By Judith Morris

Redifon expands in Soviet Union

SUCCESS and progress in the Soviet Union, strengthened by the recent Informatica '79 Exhibition in Moscow, has prompted Redifon Computers to expand the company's marketing activities in this area. The new operation will be under the direction of Ken Seabrook, who has become general manager for the Socialist countries, excluding Czechoslovakia. He was responsible for heading the entire Redifon Computers Eastern European marketing organisation, and was the company's first representative in Poland in 1972, in the USSR in 1973, Czechoslovakia in 1974 and finally Hungary in 1978. Several new appointments are expected to be made following the announcement of the operation, one of the first being that of Neil Greer, who has become country manager for the Soviet Union. After joining Redifon as a systems analyst, Green worked as branch systems support manager for the Midlands, and when he transferred to the sales organisation held the positions of branch manager where he was asked to form the South-West branch. He then moved to the Midlands branch in the same capacity. Alan Lloyd has become systems support manager for the Middle East. He was previously systems support manager for Czechoslovakia, and prior to that was a systems analyst involved in a variety of projects throughout the UK and Poland. Irae Eaglesfield has been appointed installation supervisor for the Soviet Union. Further appointments at Redifon Computers will be announced shortly.



CHANGES in new technology and the impact of microelectronics were discussed by Clive Jenkins, general secretary of the Association of Scientific, Technical and Managerial Staffs, when he visited the National Computing Centre in Manchester. Jenkins is pictured here (seated) with, from left to right, David Fimberg, director of the NCC, Mike Connor, head of distributed computing division of the NCC, Reg Boot, group director of the development and computing practice group of the NCC, Lyndon Morgan, team leader of microprocessor development, NCC, Tim Webb, national officer, ASTMS, and Professor Dorothy Wedderburn, who is head of department of social and economic studies, and director of the Industrial Sociology unit, at Imperial College, London.

Pacific Telecomms in Hawaii

THE organisers of PTC '80, the Pacific Telecommunications Conference, practice what they preach in their call for papers by asking authors to supply an address for electronic mail via Telex. If they have one. Papers should be submitted to Richard Barber at the University of Hawaii, 2424 Mālie Way, room 704, Honolulu, HI 96822, USA, by July 30, and cover one or more of the programme topics: economics and regulation, Pacific issues, social planning, engineering, data communications, and displays and demonstrations. Technology also figures in the publishing of reports from this year's PTC '79, which are available on videotape as well as the new fairly common form of audio cassette and the traditional book. Sponsored by seven bodies including the Public Service Satellite Consortium, the Hawaiian Telephone Company and the State government, the conference will be held from Monday to Wednesday, January 7-9, 1980, at the Uluani Hotel in Honolulu. Registration costs \$50, reduced to \$15 if booked before September 30, and inquiries should be sent to the same address as for papers.

CONFERENCES

Retrieval

St John's College, Cambridge, is to be the venue for an international conference organised jointly by specialist groups in information retrieval within the BCS and the ACM. The conference will discuss the theme of basic research in information storage and retrieval, as well as new applications. It will be held from June 23-27, 1980, and papers are now invited for presentation. Those wishing to submit a paper should send a two-page synopsis before September 14 to Christine Cox, BCS, 13 Mansfield Street, London W1.

VDU eyestrain

THE fifth annual seminar of the Scottish Ergonomics study group will be held on September 26 at the Moray House College of Education in Edinburgh. The theme of the seminar is to be VDU eyestrain and low back pain. Four speakers will present the results of research into eliminating discomfort and strain from the use of VDUs. For details and application forms write to Mr C. J. A. Andrews, Department of Biological Sciences, Napier College of Commerce and Technology, Colinton Road, Edinburgh.

DIARY

Soccer results

Results
Division 1
Gryphon 3, Jadpu "A" 0
SIA 3, Oatscense 2
Jadpu 4, SIA 4
Division 2
Arlis 5, John Lewis 3
Canshara 4, Arlis 3
Division 3
UCSL 2, CJ83
Sherwood 2, Computer Weekly 3
Division 4
Wallford 6, Jadpu 1
Allen 1, CDC 14
Forest 2, Wellers 3
Jedpu 2, CDC 1
Alan O, Hoekyne 6
Division 5
NCR 2, Kingston 2
Gill & Oulua 2, Vantack D
British Aerospace 2, Barrow O
Gill & Oulua 6, NCR 3

Liveware File

YOU'RE HAVING TROUBLE WITH THE MACRO FLOWCHART?



...DO WE HAVE A JOB ON FOR THE ALL-ENGLAND CLUB?

by Don

WAIT JUST A MINUTE...



OH, YOU MEAN THE MCENRDE PROGRAM!

Displays

PAPERS are requested for presentation at the fifth international conference and exhibition on electronic displays, which is to take place from September 4-8. The conference will cover all aspects of electronic displays, and will be held at the Mount Royal Hotel, London. Enquiries to: Mrs. R. A. Went, Computer Unit, University of Warwick, Coventry. Tel: 0203 24011.

IUCC colloquium

PAPERS are invited for presentation at the 1979 IUCC colloquium, which is to take place at the University of Warwick from September 10-13. In Coventry from September 10-13. The colloquium will cover all aspects of computing, databases, and computer graphics. Abstracts for papers to be sent to: Mrs. R. A. Went, Computer Unit, University of Warwick, Coventry. Tel: 0203 24011.

Lamsac seminar

LAMSAC has organised a seminar on business management and the computer to take place in London from July 24-26, at the London Graduate School of Business. Further details may also be obtained from Lamsac, 3 Brookings Gate, London SW1.

Shake-out for US personal computer firms

FIRST signs that a "shake-out" in the US personal computer industry is under way have come with the bankruptcy of Processor Technology, following hard on the heels of Imal in filing for Chapter 11 protection. Processor Technology, which manufactured the well-received Sol computer, among other hardware, is liquidating its assets to pay off creditors no longer in operation. A spokesman for the company said last week that the specific reason for its folding was "complex," but laid the blame on an increasing shake-out among manufacturers. He said it was unlikely that Processor Technology would continue in business in any form, as no acceptable offer to buy the company had been made. It was, however, currently negotiating licences with other manufacturers, so that existing customers would have spares and service cover.

John Lamb, marketing director of Processor Technology's UK distributor, Comart, said last week that they had recently obtained a large delivery of spare parts for the Sol system, so customers should be covered. Comart is not, however, accepting new orders. Imal's problems have been purely financial, according to vice-president, operations, Steve Bishop. "The situation arose because of problems managing our high growth rate. We required a lot of cash to finance the growth, and we didn't keep it in check," he said last week. The company filed for Chapter 11 protection with the US courts on March 12. Chapter 11 is a provision of the US bankruptcy laws which allows a company to continue operating on a day-by-day basis until a formula can be found that satisfies its creditors.

Since then it has made two offers to creditors. The first, for a stock issue in lieu of payment, was turned down. The second, offering 10 cents on the dollar, was sent to creditors last week. A court hearing for the reply is scheduled for this Friday. Bishop stated last week that Imal's position was improving rapidly, a situation helped by the appointment in January of Glenn Phinney as vice-president, finance. "April was our second biggest sales month ever," Bishop said, "and profit rose from a year-on-year figure of 2.8% in March, to a monthly figure of 9% in April. We are definitely staying in business."

Low-cost Level 66 for Xerox users

AFTER allowing Telefile to make most of the running in the Xerox Sigma replacement market, Honeywell has finally come out fighting with a new Level 66 machine designed to run the CP-6 operating system, and priced below the Telefile bit-slice emulation of the Xerox Sigma 9.

Following the withdrawal by Xerox Data Systems from the mainframe computer market three years ago, Honeywell took over maintenance of the Xerox base worldwide, which consisted of some 1,000 mainframes. The company has been inveigling the income from the base in developing a new operating system, CP-6, to enable users of the highly-regarded Sigma CP-V operating system to migrate to Honeywell's Level 66 (CW, January 19, 1978).

Until last year, when doubts arose over Telefile's financial health, the more attractive move for Sigma users appeared to be to upgrade their sites with the Telefile bit-slice emulation of the Sigma 9, which will run the CP-V operating system unchanged. With new financing now granted to Telefile, the company's credibility is restored, but Honeywell's new offering will make for some fierce marketing battles.

The new model from Honeywell is called the Level 66/DPS/B3, is priced below Telefile's offering, and joins two models announced last year: the 66/DPS/C3 and C/5, which remain available. Honeywell describes the B3 as an 80 user system, and argues that while some conversion will be necessary for users to move from CP-V to CP-6 it will be the least painful and least expensive conversion available to them. The company also points out that at a US Xchange Xerox users meeting last year, CP-6 was given a standing ovation.

CP-6 is now on controlled release, and the first site is the University of Strathclyde in Canada; the university will be writing some software for Honeywell to run under CP-6. The operating system goes on general release at the end of the year, and Honeywell has in the past dropped strong hints that it will become the basis of a major new product, with the forthcoming successor line to Level 66 likely to combine elements of both GCOS and CP-6.

Right to privacy

PROCEEDINGS of the conference on Computers, Records and the Right to Privacy, held in London in January (CW, February 1) have now been published in book form by Input Two-Nine of 7 Banstead Road, Purley, Surrey, price £5.60.

Insac firms win software development contracts from US companies

FOLLOWING the agreement signed between Insac and Calcomp in conjunction with SPL, Insac is negotiating other software development contracts with major mainstream US computer manufacturers. The contracts, arranged by Insac Inc on behalf of its members, will be similar to the one between Calcomp and Insac under which SPL is developing applications software for the new Calcomp IGS 500 interactive graphics system (CW, September 21, 1978).

Although the traditional argument on behalf of the UK software industry has emphasised low cost, Insac's proposals price the work at the going US market rate, and the stress is rather upon the exceptional skills available within Insac member companies.

Membership of Insac has also enhanced the credibility of member companies in the US and, following the agreement with GTE on videotext, Insac has established a solid and dependable image in the eyes of US corporations.

Despite the emphasis by Insac on the US market, most of the member companies still operate primarily in Europe, although four are now either present in the US market or planning an entry.

UK government shareholdings in Insac member companies are lodged not with Insac itself but with the National Enterprise Board, so there is no reason why Insac should not continue to operate on their behalf, and perhaps on behalf of UK software companies which are not members, even if the Tory government decides to sell off the NEB shareholdings.

French pull the plug

From Front Page
The Prestel stand had no problems with their telephones. Of the 30 or more telephone lines in the hall the only ones that appeared to have any problems were the three associated with the Prestel stand.

Last week the Post Office was still playing it cool, lazing a statement that the line had gone out of order and it proved impossible to get them repaired before the end of the exhibition. No comment could be obtained from the French authorities on the reasons for the failures of the telephone lines or of the French Didon system.

On a previous occasion in April the Post Office was invited to demonstrate Prestel to the Western European Union, an international meeting of parliamentarians held in Paris, but the French PTT refused to allow connection of the Prestel sets to the telephone lines, even using French modems.

Further light was shed on the French attitude to Prestel by the fact that in the French plans presented at the Paris conference, mention of British work in the teletext and videotext field was studiously avoided.



Plessey goes into battle

A DIGITAL message terminal has been introduced by Plessey for use with mobile field radio in the Army. A full alphanumeric keyboard allows easy preparation and editing of messages up to 100 characters long on a scrolling 21 character display, for transmission in one quick burst, and storage of incoming messages up to 700 characters. Arrival at the Casser teleprinter which was sold to the British Army two years ago (CW, June 2, 1977), the Plessey DMT was shown in prototype form at the Comma 76 show in Birmingham.

last year and suggestions from potential customers have been used in the production model including tender specifications from an unnamed army. Conting about £3,000, the DMT will be aimed at a market estimated at between 100,000 and 400,000 units over the next five years. Full scale launch on the international market will be at a defence electronics show in Wiesbaden in September. Our picture shows the device in use with a Plessey Clansman monopole radio.

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MICRO NEWS FROM THE IMMM IN GENEVA

by Martin Banks

Crash-free systems are on the way, says DG

THE move by Dato General to what it calls "crash-free" systems was a key feature of the company's stand at IMMM, in the shape of MicroNova hardware running the new Micron operating system.

According to Jan Pletier Scheerder, the company's Paris-based product marketing specialist for the MicroNova, the Micron operating system and the Pascal compiler that was introduced with it last month (CW, May 24) are both seen as important steps along the way to making computers "comfortable to program and use."

The "crash-free" aspects of Micron were emphasised by Scheerder at the show, particularly as the majority of MicroNova configurations on which it can be used are in the 64K word size. "With this size of memory, users can easily write directly into the operating system by mistake," he said, "and so make a complete mess of it."

"That is why self-checking and self-repairing facilities have been included in Micron. Most program crashes of this type can be overcome."

In addition, the system can also reclaim 512 words of disc memory with a facility called Fixup.

Although Micron is broadly compatible with Dato General's AOS operating system for its Eclipse computer range, there are some basic differences.

For example, AOS functions such as operating with batch strings are not possible with Micron. The latter, however, is much faster than AOS, and according to Scheerder, is fast enough to be used as a real time operating system. It also incorporates logical mapping for floppy disc drives. This considerably improves the operating speed of the discs, and is another feature not found on the bigger AOS.

Scheerder said that the prime reason for introducing Pascal for the MicroNova was the need to implement high-level programming improvements on to microcomputer systems.

Tandy plans European computer centre network

THOUGH there was no hint of the TRS-80 Model II on the Tandy stand at the show (Micro News, June 21) there was news from the company about a change in marketing and sales policy in Europe.

Following the lead already established by the company in the US, the European operation is now establishing a network of specialised computer centres to complement the well-known Tandy hi-fi shops, through which the TRS-80 has so far been sold.



Visitors at IMMM in Geneva were up this year, but the number of stands was down.

Fewer exhibitors

AS one of the trend-setters in the European micro-based exhibitions and conferences, this year's International Microcomputers, Minicomputers and Microprocessors Exhibition and Conference marked a potential new trend in this area — a lessening of interest and direction by the exhibiting companies.

While the sun shone brightly in Geneva for this third year of the event, and the number of visitors for the opening day rose by some 20%, the number of companies willing to exhibit noticeably dropped, and two of those that had taken stands failed to show up.

The main reason, which the organisers, Kiver Communications, were quick to spot, seemed to be that the show is now lacking in any specific emphasis. It has become neither a business equipment nor industrial applications showcase, and many potential exhibitors appear to be responding accordingly.

For next year's show, therefore, Kiver is planning what he calls a natural progression, that will move the event much more strongly into the micro-applications area. In particular, the two areas of data communications and distributed data processing applications will be strongly featured.

Then themes will be stressed both in the exhibition itself, and in the conference held at the same time as the show.

The change has already prompted renewed interest in the event from existing exhibitors, according to a Kiver spokesman.

The company is not planning to change the location or timing of the show for next year.

MAKING a first appearance at any European exhibition was California-based Industrial Micro Systems, with an impressive range of business-oriented systems, together with a single-board computer family aimed primarily at the industrial and process control market.

Two business systems were on the company's stand. The first, the Series 5000, is the smaller of the two, though it is designed to support over 300K bytes of main memory end up to three floppy disc drives.

Designed to be either free-standing or desk mounted, the S-100 based Series 5000 uses either an Intel 8080 or Zilog Z80 processor board, the main memory being configured from the company's own range of 8K, 16K and 32K byte memory cards.

For secondary storage, from one to three double-sided double density floppy discs can be used, providing a maximum of 1 Mbyte.

Its larger brother, the Series 8000, features a broadly similar configuration in an expanded form. Main memory for this system goes up to a maximum of 500K bytes, again made up from 8K, 16K or 32K byte memory

Crossing the Atlantic for the first time

cerds, while secondary storage is expanded to a limit of 3 Mbytes, by using up to three double-sided, double density eight-inch floppy disc drives.

Both systems are available with the industry standard CP/M operating system. In addition, each offers another alternative OS. For the Series 5000 it is MVT-FAMOS from MVT Microcomputer Systems Inc. This is a multi-user, multi-tasking operating system specifically intended for use in multi-terminal configurations.

The alternative operating system for the Series 8000 is the UCSD Pascal system.

For the Series 5000, Industrial Micro Systems offers the Software Systems CBasic compiler/interpreter as the main programming language. This is also available on the Series 8000, where it is joined by Fortran-80 and Cobol-80 compilers from MicroSoft, as well as CAP's MicroCobol.

Although Industrial Micro Systems has been in business in the US for about four years, this is the first time the company has ventured across the Atlantic. It is now actively looking for European agents and distributors.

Paris or Brussels base probable for California manufacturer

WITH only a borrowed Horizon computer from a local Genevois user to display on its stand, the first visit of North Star Computers to the IMMM exhibition was not all it might have been.

Bernard Silverman, North Star's director of marketing, did, however, have some interesting plans for the Berkeley, California company's marketing in Europe.

Though a final decision has still to be taken, the company is seriously considering establishing its own marketing operation in Europe. The likely base for this will be either Paris or Brussels, and according to Silverman, a decision is expected within six months.

With a European base, the company will be able to enhance the support given to its network of dealers across the Continent.

Silverman stated that such a move would not mean that North Star planned to start assembly or manufacture of its systems in Europe.

"Growth in production is limited by the availability of components," he said, "and the situation is the same for every manufacturer. Setting up assembly in Europe would not

change things." The company will continue to concentrate its production efforts on its Berkeley facility.

This concentration is now being placed internally on fully assembled systems, which represent about two-thirds of North Star's production output.

Any shortfall in component supply is now falling first on the other third of the company's production, the kits.

The reason the company had only a borrowed computer to show the public was that its entire display set-up had become lost en route to the show.

Process control and talking to the animals

THE conference at IMMM, which ran concurrently with the exhibition at the Palais des Expositions, also displayed the lack of impetus and direction seen this year at the exhibition itself. Despite this, there were several papers of interest.

For example, Evelyn Szabo of San Diego, California, presented a paper in the Personal Computing session of the conference that outlined a growing trend in industry — the use of personal computer systems instead of dedicated microcomputer systems for the control and operation of process control equipment and machine tools.

However, the initial market for personal computer systems had been envisaged as being in the home, and a big market had in fact been found in a wide range of business applications.

The flexibility and ease of programming that was a fundamental part of such equipment made it ideal for industrial applications where a large amount of alphanumeric data was required by an operator.

and by the machine. This was necessary, Szabo said, where the operator was required not only to monitor the operation of the equipment, but also to change or modify its running, either to maintain stable production, or when there were changes in production requirements.

In addition the personal computer system could also be used in its more "normal" role as a data processing system, for example running simulations of the production equipment for check-out and troubleshooting purposes.

Both hardware and software costs could be considerably less than for a dedicated microcomputer system, and the use of high-level languages such as Basic often meant that programs could be changed rapidly to suit altered production requirements.

There were, however, disadvantages to using personal computers in some industrial applications. Szabo pointed to a major one as being radio frequency interference. The interference problem is



Fairclough joins NCC advisers

THE director of development of IBM UK and managing director of IBM UK Hursley Laboratories, John Fairclough, has been appointed by the National Computing Centre to its technical advisory committee.

Fairclough, who has worked for IBM for the past 22 years, is a member of the boards of IBM UK and IBM UK Holdings. In 1970 he became the first IBM executive in this country to get a top job with the parent company in the US, when he was appointed director of IBM's systems development division laboratory at Raleigh, North Carolina.

The NCC technical advisory committee was set up to advise the director of this NCC on developments in computing and their effects, and to assist in the formulation of plans for future NCC activities.

Big cash and carry order

ONE of the biggest food wholesalers in the UK, Booker Belmont (Wholesale) Ltd, has placed an order with Real Time Control of Watford for 250 RTC 486 microprocessor-based cash and carry terminals. As a single value order it is said to be the largest placed to date in the UK for point-of-sale equipment in the wholesale cash and carry industry.

Packages for NHS

ADMINISTRATIVE and laboratory computer systems for the National Health Service and private hospitals are the principal products of a new company based in Winchester, Health Computing. The firm is funded by Technical Development Capital, a division of ICF, and by the Midland Bank. Its first product is to be a micro-based patient waiting list system.

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Paper group gets into computers

PAPER and packaging conglomerate, the Dickenson Robinson Group, with a turnover of £500 million a year, is moving into the computer business in a big way with a new subsidiary called DRG Business Machines. Its main product line will be the family of small commercial systems built in the US by Cado Systems Corp of Torrance, California (CW, March 22).

The managing director of DRG Business Machines, Mike Kilmartin, told Computer Weekly that the company would start trading on July 1 from new offices in London and Bristol,

and that there would be offices in most major UK cities by the end of the year.

There is also an office in Western super Mare, the location of Western Accounting Systems, a small systems supplier that covers the West Country. WAS has been taken over by DRG and its staff, including Kilmartin, will form the nucleus of the DRG Business Machines workforce.

According to Kilmartin, DRG's sales, software and engineering support staff will be expanded from about 20 to nearly 50 by the end of the year.

DRG Business Machines is part of the trading division of

DRG which already owns a DP consumables vendor called DRG Systems Supplies.

The Cado family, which is already sold in most other parts of Western Europe, comprises a group of systems that will cost between £7,800 and £25,000 in the UK.

Notable software features include a disc operating system said to offer highly effective file management, and an extended Basic programming language called Cado. There are also applications packages for jobs like payroll, stock control, sales, purchase and nominal ledger processing.

The Cado machines should interest big computer users as well as the first time buyer, because of their communications capability which includes IBM 2780/3780 and 3270 emulation.

Cado systems can have up to four VDUs and other hardware features include disc storage that can be expanded from 1.2 Megabytes on diskette to 80 Megabytes on hard disc drives.

Return to work by GEC engineers

HAVING rejected a company offer that would have resulted in pay increases ranging from 7% to 17%, engineers at GEC in Coventry are now considering further action.

Renewed selective strike action (CW, June 7) has not been ruled out, even though 67 commissioning engineers, members of the Association of Scientific Technical and Managerial

Staffs, have returned to normal working. They had previously been suspended. "The men returned to work on the understanding that the company would hold improved talks on their pay and conditions," said an ASTMS spokesman. "However, the company is still holding fast to its plan to deal with all engineering groups by making an overall pay offer."

Times men look for new jobs

THE composers' union at The Times has decided to give up waiting for a settlement of the dispute there and try to find other jobs for its 600 members who have been on strike pay since November. A recent union meeting refused to spread the dispute to Thomson regional

newspapers. In announcing the decision, NGA general secretary Joe Wade said, "We have had to come reluctantly to the conclusion that The Times and the Sunday Times are dead. I don't think there is any chance or any way of them coming back."

NPL scientists strike over pay

SCIENTISTS at the National Physical Laboratory in Teddington took strike action last week in support of a pay claim and to mark their discontent over the Civil Service Department's handling of the claim.

The action was part of a national one-day stoppage organised by their union, the Institute of Professional Civil Servants, which was supported by about 90,000 members nationwide.

All computer systems of NPL were affected.

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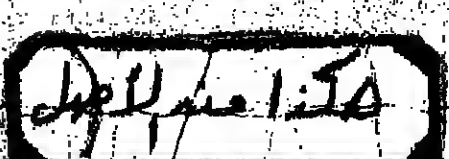
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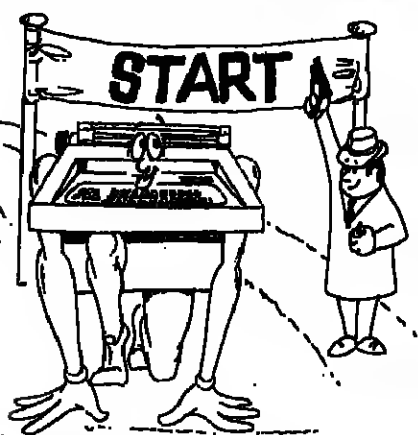
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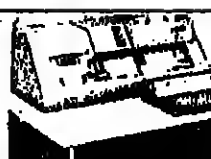
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INTRODUCTION TO PASCAL

Newcomer that challenges the establishment

Part 1

PASCAL is a relatively new high level computer language which has grown remarkably in popularity over the past two years and is now a serious contender to the older, established languages. This is the first in a series of articles which aims to teach Pascal by example and explanation. Programmers should be able to pick up the gist of the language by the end, but even those who do not speak Fortran, Cobol or any of the other computer languages, should find the discussions of interest. Pascal is a modern language and as such tries to avoid abbreviations, mnemonics and jargon, making it one of the most readable languages around.

What is Pascal used for?

Pascal is a general-purpose language. That means it is a good teaching medium with scientific and commercial overtones and enough low-level control to make it extremely useful for systems programming. Perhaps it is best to say that it sits somewhere between and above Fortran and Cobol, looking quite a bit like Algol 68 and PL/I though smaller and yet in some ways more advanced than either. Figure 1 sums this up.

It is worth remembering that Fortran, Algol 68, Cobol and Basic were defined between 15 and 20 years ago, whereas PL/I and Algol 68 are 10 years old. This makes Pascal a youngster at eight. Let us look at each of the uses of the language in more detail.

Pascal for teaching

Pascal is an ideal teaching language. Firstly, it is small and simple; there are seven possible ways of structuring data and no more than eight kinds of statements. The syntax is consistent and in fact is entirely described in three short pages of pictures like the one in Figure 2.

Because it is small, it is easy to teach — undergraduates who have done some programming can cover the whole language in a four-hour course. Workshops for business programmers would, typically, last two days. It is also easy to remember: there are very few default actions and all constructs can be used in most contexts. Perhaps its most attractive innovation is its security: both control and data structures foster structured programming and it is in fact very difficult to let bugs creep in. Pascal is taught at present as a major language at an increasing number of universities throughout the world. There is also a move afoot to introduce it in schools in Europe with the aid of cheap, micro-processor systems dedicated to Pascal.

Pascal for scientists

Scientists usually want two things from a computer language — fast array processing and ready access to libraries in other languages. Pascal has both. It also has an ingenious way of checking array subscripts at compile time, reducing considerably the incidence of these common errors. On most computers, Pascal can call Fortran and Assembly language routines and, certainly on IBM systems, there is nothing to stop one interfacing with PL/I and Algol as well. At the moment, Professor David Barron at Southampton University is co-ordinating the effort to translate the NAG subroutine library into Pascal. Any numerical analysts or programmers interested in helping should contact him.

Pascal as a commercial tool

For commercial applications, Pascal provides records (with variants), stream I/O, device-independent files and dynamic storage allocation. Cobol users, once they get used to the immensely superior control statements, will find that Pascal reads easily. Working on the maxim that "You only write your

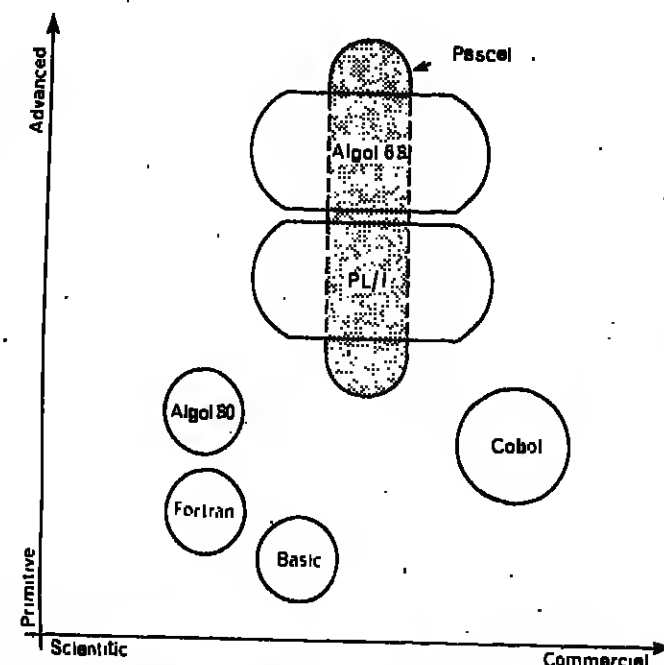


Figure 1. Where Pascal stands in relation to other languages (The size of the circles indicates the size of the language in terms of syntax, not power.)

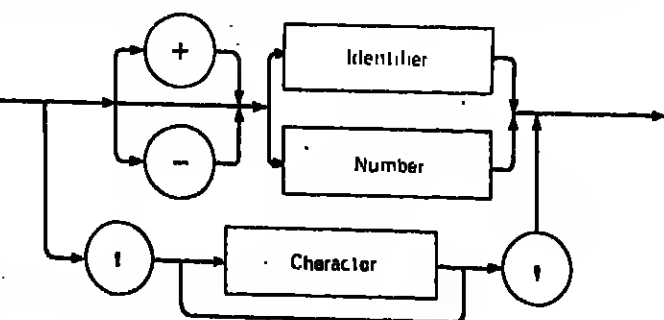


Figure 2. A syntax diagram for a constant in Pascal.

program once — you (and others) read it many times," current Pascal style encourages meaningful (even if lengthy) identifiers. Thus comments are often unnecessary. This is a great boon to maintenance programmers who only have to update one language, not the language and the comments.

In keeping with Pascal's "small is beautiful" banner, there is no decimal arithmetic, just as there is no built-in complex arithmetic for scientists. But because the language is procedure-oriented, such deficiencies can be overcome quite simply by the use of libraries.

Pascal in systems programming

The best evidence of Pascal's suitability as a systems language is that it is used to write its own compiler. Compilers are usually from 6,000 to 10,000 lines of neatly laid out Pascal, with about 2,000 lines of supporting Assembly language routines (for input, output, trigonometry etc). Pascal can also be interpreted and the most popular implementation is the Portable Pascal-P4, dis-

Computer	Pascal system distributed by	Size to compile	Relative speed	Linkage to libraries
IBM 370	Australian Atomic Energy Commission	180K bytes	Fortran G	Yes
ICL 1900	Queen's University, Belfast	36K words (unoverlaid)	Much better than Fortran	No
CDC 6600	ETH Zurich and Minnesota University	48K words (overlaid)	Twice as fast as Fortran	Yes
Univac 1100	Copenhagen University	42K words	Faster than Fortran	Yes
Burroughs B6700	Texas Instruments	Two-thirds the size of Algol	Algol	Not yet
Data General Nova	Lancaster University	32K words (overlaid)	Algol	Pascal only
Digital Equipment LSI-11 and other micros	California University, San Diego	32K bytes	700 lines a minute	No

Figure 3. Details of some Pascal implementations

By Dr Judy Bishop

HAVING already attracted widespread use in education, Pascal is poised to make a major impact in a much wider context. The last year or two has seen a growing number of manufacturers supporting the language, particularly on microcomputers and minicomputers. Its selection as the basis for the US Defence Department's new real time language Ada has also contributed to bringing it into the public eye, while its imminent emergence as a mainstream computer language has prompted ANSI to set up a working group to develop a language standard.

With these developments in mind, Computer Weekly this week brings a 10-part series providing an introduction to Pascal as a language. Written by Dr Judy Bishop, of the University of Witwatersrand, Johannesburg, the series will conclude with a bibliography provided by Professor David Barron, of Southampton University. Barron is one of the leading UK exponents of Pascal.



Judy Bishop first became acquainted with Pascal in 1975 while studying for a PhD at Southampton University. Previously a user of Algol 60, Fortran, and various assembly languages, she has since then adopted Pascal for everything she programs — from compilers to financial application packages.

Judy Bishop is now lecturer in computer science at Witwatersrand, which this year awarded her from Fortran to Pascal for undergraduate teaching.

tributed by "the home of Pascal", ETH in Zurich. This system can be bootstrapped onto any computer — mainframe, mini or micro — with the minimum of fuss and effort.

There is also a version of Pascal called Concurrent Pascal, devised and distributed by Per Brinch Hansen in California.

Where did Pascal come from?

In the late Sixties, several committees were devoting long hours to designing successors to Fortran, Cobol and Algol 68. They eventually came up with Algol 68 and PL/I, but some members felt that these languages were too big and unwieldy to ever be viable alternatives to the status quo. One man, Professor Niklaus Wirth of the Technical High School in Zurich, turned his reservations to good intent by designing Algol W. This was popular for a while but was soon superseded by Pascal in 1971. Pascal is named after the 17th century French philosopher, mathematician and theologian, Blaise Pascal. It is not an acronym and should not be written in capitals.

Who uses Pascal?

Pascal is used all over the world, from California to Russia, from Scotland to Tasmania; by all kinds of people; and by any computer you care to mention. The US Defence Department is using it as the basis for its Ironman project to find a common defence language and the latest version of the Burroughs operating system for large computers is written in a derivative. Figure 3 gives a brief rundown of some of the major implementations, indicating the range of distribution centres.

Pascal is not the preserve of any particular computer manufacturer and all the compilers are privately distributed and maintained at very reasonable prices (from free to £100). This does not mean that manufacturers are not interested in Pascal. CDC supports a maintenance centre at Minnesota, and ICL commissioned and financed the writing of a compiler at Southampton University for the 2800 range.

Pascal Users' Group

The Pascal Users' Group was started in 1976 by Andy Mickel at Minnesota University, following on from the success of the Pascal Newsletter initiated by George Richmond at Colorado University. PUG publishes a 150-page quarterly packed full of news for users, uses, implementations and articles. Membership is open to individuals, organisations and libraries and costs £4 a year. Joining PUG is the best way of finding out about this remarkable new language.

Part 2. Bug-free data? A look at Pascal's usual and unusual data types.

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THE CHALLENGE OF MICROPROCESSORS
SELECTED READINGS FOR ENGINEERING EDUCATORS, Michael G. Hartley and Anne Buckley (editors). This book draws on the experience of the Digital Processes Group and members of the Microprocessor Unit at UMIST, together with academic colleagues worldwide. Its emphasis is on the problems of what to teach in the microprocessor era and the most effective method of presentation. After a brief introduction to microprocessor technology comes an up-to-date survey of the state of the discipline.

Successful contributions cover laboratory facilities and "hands-on experience", discussion of specific experiments and the organisation of short courses for industrialists. The Microprocessor Engineering Unit at UMIST is described as an example of a response to a real need for teaching, advice, consultancy and training. The book concludes with a select list of books and journals relating to microprocessors.

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INTERNATIONAL NEWS IN BRIEF

Olivetti woos Amdahl

OLIVETTI has spouted out Amdahl about the possibility of the Italian company taking over marketing of the large-scale IBM plug-compatible Amdahl 470V mainframes in Italy and surrounding countries.

Olivetti is keen to expand its portfolio of high-technology computer products and already markets the Microdata Express business system in Europe as the Olivetti 1800.

Amdahl's reaction is believed to have been unenthusiastic.

NCR subsidiary

ALTHOUGH NCR has now completed acquisition of communications systems manufacturer Contem Inc of St Paul (CW, February 8), the company will not lose its identity; NCR is to run it as a subsidiary under its old name.

Price war

THE Japanese Fair Trade Commission has been called in to investigate a fierce price war which has broken out between computer companies in Japan. Companies have been reported to have offered discounts of up to 80%, and the government wants to establish whether this falls foul of Japan's Anti-Monopoly Act, which bans dumping.

Esso order

FRENCH minicomputer manufacturer, SEMS, has won an order for a data acquisition and surveillance system from Esso Chimie, part of the US-based oil giant, Exxon. Configured around a dual Solar 16-85 the system is to be installed at an ethylene plant at Notre Dame de Gravenchon in Seine Maritime.

2956 in Hong Kong

UNDERLINING the attractions of DME/2 as a migration aid for ICL 2800 users into the mainstream 2900 line, Jardine Matheson of Hong Kong has decided to replace its twin 2804s with a 2956. The original 2904 was the International trading and manufacturing company's first computer, and took over applications which were run on an ICL bureau until 17 months ago.

Japanese centre

A NEW design centre is being planned by microelectronics giant Intel for Japan. Scheduled to begin operation next year, it will be based at the company's wholly-owned subsidiary, Intel Japan Corp. It will be the second "off-shore" design centre established by the California-based company.

Teletext foothold

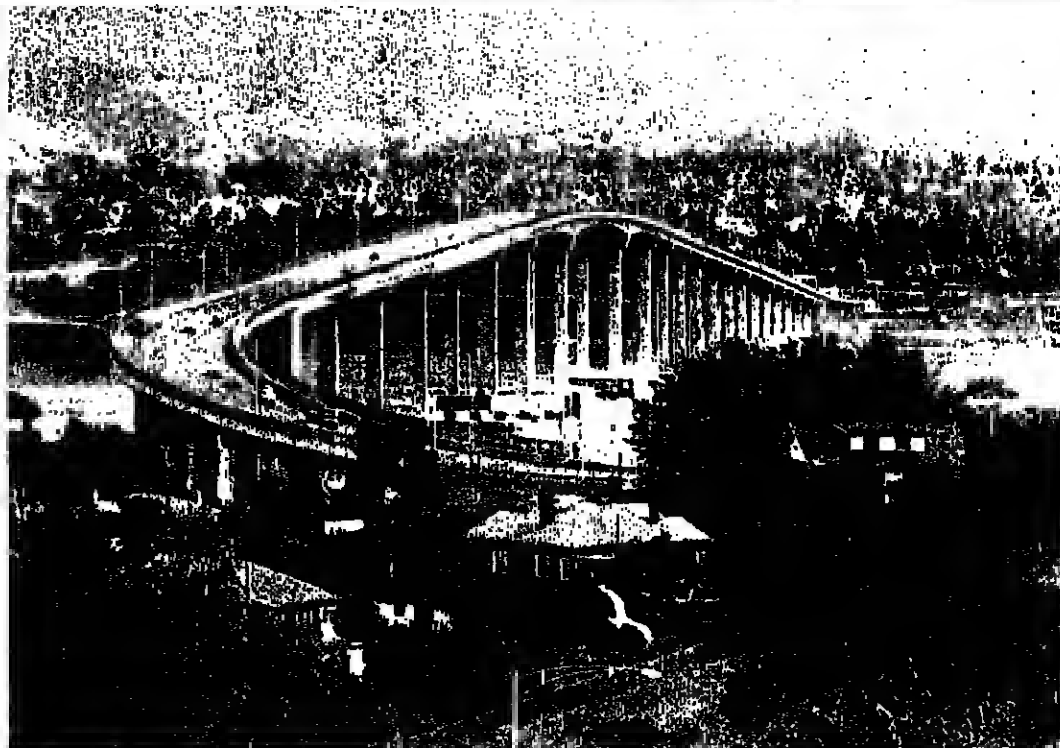
ANTIOPE, the French broadcast teletext service designed by Telediffusion de France, is renting air space in the US from Microband, a company licensed to offer wideband radio transmission facilities.

COMPUTER WEEKLY International

NUMBER 94

THURSDAY, JUNE 28, 1979

Australia aims to end run of bridge disasters with a Nova



Hobart's Tasman Bridge, which has one of the most advanced computerised traffic control systems in the world.

AUSTRALIA has been unlucky with its bridges. Anyone who was in Melbourne in 1971 will not have forgotten the Westgate bridge disaster when a hex-girder bridge under construction collapsed. Even the legendary Sydney Harbour Bridge is regarded by some as a disaster for it is said it has still not been fully paid for.

High on the list of bridge disasters is the one in Tasmania in January 1978, when an ore carrier strayed off course and smashed into a pylon of the Tasman Bridge across the River Derwent in Hobart.

Four motorists crossing the bridge at the time were killed, and seven crewmen on the ship died. It is unfortunately not possible entirely to prevent ships straying

off course, but following the disaster it is required that all vessels over 2,000 tonnes must carry a pilot, while a Data General Nova 3/4 has been called in to ensure that if another such crash occurs, there will be no vehicles on the bridge at the time.

The captain of a straying ship now radios the harbour master who can immediately use an emergency switch to instruct the computer to close the bridge to traffic. At other times the computer is used more conventionally to control the flow of traffic across the bridge according to the traffic conditions.

The computer also monitors the performance of all routine and emergency signalling devices, and logs all lane closures and other traffic events.

'Roll on H-series' says Gene Amdahl

"ROLL on the IBM H-series: the sooner it is announced, the better!" That was the sentiment expressed forcefully by Dr Gene Amdahl to San Francisco stock analysts.

"The next mortal blow predicted to hit Amdahl is the H-series," he said. "Some people expect it to be announced in September, others early next year. I hope it will come soon to put an end to the rumours. The only change it can include which would be reasonable from the point of view of the user are well within the capabilities of Amdahl Corp."

Two weeks ago, Amdahl revealed that a dramatic switch by customers away from purchases and towards leasing meant that it might only break even on second quarter business (CW, June 21).

Following the announcement, US stock analysts frantically revised their estimates of Amdahl's full year earnings and were in some disagreement about the company's prospects.

The trend towards leasing, which is equally strong at IBM, is driven by uncertainty and expec-

UN to fund third large Indian system

FOLLOWING the Control Data Cyber 172 scheduled for installation in Delhi, and the Digital Equipment DECsystem-1080 in Bombay, a third large computer is likely to be installed in India under United Nations funding.

The Indian government wants a computer system worth \$1 million for computer-aided design of industrial systems. To be installed at the Indian Institute of Technology in Kanpur, it will form the heart of a \$2.05 million National Centre for Computer Aided Design of Engineering Systems.

The United Nations Development Program, UNDP, is already funding the National Informatics Centre in Delhi, which will use the Cyber machine, and the National Centre for Software Development and Computing Techniques at the Tata Institute for Fundamental Research, which has the DECsystem-1080.

UNDP has agreed in principle to fund the machine for IIT Kanpur, and is only awaiting a formal request for support from the Indian government at the UNDP office in Delhi.

The graphics and time sharing mainframe IIT now wants is for use in the computer-aided design of power systems, structural engineering, electronic systems, mechanical engineering, water resource systems, fluid flow and heat transfer systems, chemical and metallurgical pro-

cess design, transport engineering and real time process control design.

UNDP is funded in the main by voluntary contributions from UN member countries, the US being the largest donor, and Sweden and the other Scandinavian countries major contributors. UNDP now runs on a five year plan, informing governments of eligible countries what level of funding they are likely to get over the five-year period.

SESA joins CII-HB in new venture

FIRST taker for CII-Honeywell Bull's offer to other French companies to participate in a new subsidiary dedicated to the implementation of large systems (CW, October 12, 1978) is Paris-based systems house SESA.

SESA, one of the world's leading exponents in packet-

switching and a regular partner with Logica of the UK on international contracts, is taking up 49% of the one million franc capital of the new subsidiary.

CII-HB set up the subsidiary because it felt it was not getting its share of complex systems

contracts in continental Europe. SESA's participation does not preclude other companies taking a stake in the new subsidiary but any such move would be likely to involve increasing the capital, because CII-HB will presumably wish to retain overall control.

Verdict for IBM upheld in Calcomp suit

THE US Federal Court of Appeals has confirmed the verdict in IBM's favour in the antitrust suit brought by Calcomp. Calcomp was appealing the decision made two years ago, when District Court Judge Ray McNichols directed the jury to accept IBM's motion that there was no case to answer in the suit (CW, February 17, 1977). Calcomp was seeking \$300 million damages against IBM for "en-

gaging in predatory and monopolistic practices in the general purpose computer and disc drive markets."

The Appeals Court ruled that to do otherwise would confirm the verdict would be "to hold that IBM could not compete if competition would result in injury to its competitors," and would be "an ill-advised reversal of the US Supreme Court's pronouncement that the Sherman Anti-

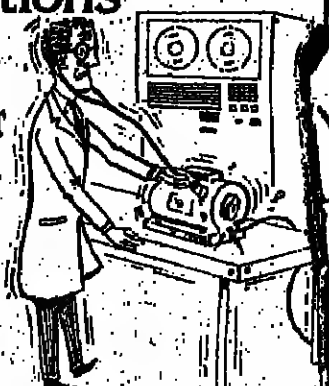
Trust Act is meant to protect the competitive process, not competitors."

IBM chairman Frank Cary welcomed the decision and pointed out that nine Federal judges had now decided that IBM competes fairly.

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Disabled people focus of attention

MICROS are making a major impact in developing aids for the handicapped and a whole day's session at the NCC personal computing conference was given over to discussing some new developments.

Telesecreary Inc of Palo Alto California has developed a number of micro-based products, including VersaBrella, a system to improve the speed and quality of recording teletype information, which is stored in digital form on cassette for subsequent output, currently to electromechanical display calls but potentially to a wide variety of interfaces, including typewriters and the telephone. A commercially available system might be announced later this year.

Telesecreary has also produced Autocom, a micro-based board housed in a wheelchair lap tray. It enables severely handicapped people to move a magnetic pointer across the board to select particular entries on the board's 128-character vocabulary. Output can be to a display or 25-character line printer, and may also eventually be interfaced to typewriters or computer terminals.

A similar kind of board can be used to program another device designed for portability on a wheelchair, the Vernette Portable Speech Prosthesis, which is a project developed by the Rehabilitation Engineering Center at the Stanford Children's Hospital and the NASA Ames Research Centre.

VPSP enables a physically disabled person to program a speech synthesiser using a select board, similar to Autocom. It is based on a Zilog Z80 with an 8100 bus and a Votex VL-1 phoneme speech synthesiser.

In its current form it still takes too long to program, and most of the research work is concentrated on designing the most effective layout for the select board. A severely handicapped person coming fresh to the system programmed a little speech to the conference in four hours but this time could be out by at least 75%.

To boost the use of micros for the handicapped, the National Science Foundation in the US is sponsoring a study by John Hopkins University into how to set up a national contest to discover new applications.

The Personal Computing Festival, held in New York in harness with NCC 79, was almost as big an attraction as the main event. The home-brew buffs, and the com-

panies that have sprung up to serve this booming market, were out in strength and MALCOLM PELTU was there to report the happening for Computer Weekly.

Guru lashes the computer ham

"WHEN you cut off a child's head you are called a murderer. But when you cut off a child's curiosity you are called a teacher."

With dramatic, almost evangelical phrases like this, the guru of the personal computer revolution, Ted Nelson, head of Computopia Inc and author of the computer freak's bible, Computer Lib, brought to life the potential of a "small computer earthquake" which rumbled through the carpeted corridors of the Sheraton Hotel, where the personal computing conference was held.

Nelson was talking on the opening day of the conference, and his speech was punctuated by the rat-a-tat-tat of machine gun bullets aimed at a variety of

targets and triggered by his belief that the micro was "the last chance to enhance human mental and spiritual life."

"We are on a dump truck headed towards an abyss and nobody is in the driving seat," he said. Computers, however, could provide "new screens, magic windows you can reach through to explore new worlds of information."

Although his main targets were the establishments which he said had created social systems based on "druggery and failure," he also lashed out at the computer hobbyists.

"Computer hams can go fly a kite. Whatever they are doing should not be confused with anything important."

He believed that the email

computer earthquake could help to remake the whole world as well as just the computer world, although he was clearer on computer improvements than on the basis for his social optimism which was backed by little more than his own enthusiastic beliefs.

As he later told another session, the significance of the personal computing world was the way in which it had turned the computer screen into "the window that moves on the world of information." All systems, he said, should be highly interactive, should use graphics, colour and imagination. On that, there was no disagreement from the hairiest computer ham to the most staid business user.

Ben Boys, science fiction editor of Omni magazine, another speaker on the opening day, provided a glimpse into the realities of today when he said that, despite all the wonders of the so-called information revolution, "the average person in New York currently has as little information about the world outside his own personal environment as a neolithic villager."

This vision of tomorrow jarred against the relative mundanity of today's information systems throughout the whole four days of the NCC, with the juxtaposition of the formal exhibition and conference with the personal computing fair.

The excitement and the potential of the personal computing revolution was summarised in an exchange that took place during Ted Nelson's talk.

One of his colleagues in the audience commented "Bullshit!" in response to one of Nelson's broadsides. To this someone also responded, "I would like to say a word in favour of bullshit. If you spread it about, things grow."

Scope and power of the micro market

THE products on display in the commercial section of the personal computer fair exhibited the growing scope and power of the microcomputer market.

There were numerous microcomputer small business systems and software, with the Apple II and TRS-80 the most popular OEM micros on display.

The Apple stand itself was one of the most impressive at the whole of the NCC. It took as its theme the way the Apples are already used in different applications areas — business, industry, art, the home, education, etc.

Scott Dinsdale, of Speksary of Ontario, which provides educational programs for Apple and TRS-80 systems, commented that he was very pleased about the professionalism of the Apple stand, because he believed it was vital that the industry leaders in personal computing provided a stable and professional market in which software and systems suppliers could grow.

Index of Los Angeles was exhibiting a microcomputer with a bubble memory extensible up to 2 Mbytes. Index uses a Zilog Z-80 and the price for a system with 128K bytes of built-in bubble memory starts at about \$8,000. Plans are in hand to market Index in Europe but no distributor agreements have been finalised.

With the personal computing enthusiasm for graphics, there was considerable interest in the Digit-Kit-Lizer (also) from Talos of Scottsdale, Arizona. This is a graphics input device costing about \$500 which currently has interfaces to the Apple, TRS-80 and RS232 and can be used for computer-aided design, data entry, mathematical analysis or graphic arts and film. Like most of the new items on display in the personal computing field, European distribution has not yet got beyond "discussions with potential distributors."

Canadian power control

CONTROL of Hydro Quebec's 18,000 Megawatt hydroelectric power grid in Canada is to be aided by a 900 channel microwave radio network linking remote sensors throughout the 620 mile grid to a pair of Control Data Cyber 171s in Montreal. These will be tightly coupled with four Cyber 178 to drive a 56 by 12 foot mosaic wall display plus four VDUs for each operator.

The control system, costing \$40 million in all, has been developed in conjunction with Control Data over the last four years and is due to be operating by this autumn. At the same time, the first of four major new

generating units will be added to the north-west side of the grid in the James Bay area, on the La Grande river. They will be expanded by 1985 to add a further 10,000 Megawatts to the capacity of the grid.

The equipment, which will provide 900 channels for voice and data, is to be supplied by GTE Lankurt Electric, a Canadian offshoot of GTE.

In later phases of the scheme, computers will also run control programs as well as driving the displays. First, production and hydraulic management programs will be developed and later, load flows and voltage schedules will be automated.

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Fibre optics help with comms

A MAJOR application of fibre optics was announced by Fujitsu to accompany the launch of the M-1XOF series of medium-scale mainframes.

Called Fapix Data Mux, it allows data transmission at 3.2 Megabits per second over a distance of up to one kilometre, and is designed to enable input-output devices, including front-end and communications processors which normally have to be sited close to the mainframe, to be installed in other parts of the building.

It offers all the advantages of fibre optics such as immunity from electrical noise interference, light-weight small bore cables, and low transmission signal loss. It can be used with all Fujitsu M-series mainframes and with the Panfacom U-series of minicomputers.

Japanese language software fillip for Fujitsu's M-series

THE most significant feature of the announcement by Fujitsu of its answer to IBM's E-Series (CW, May 17) was the inclusion of comprehensive Japanese language software.

Called Jef (Japanese language Extended Feature) the modular package has a big memory overhead, but could provide Fujitsu with the edge it needs to pull ahead of all its rivals in the Japanese market, including IBM.

Jef is the first such package to be offered for mainframes, and runs under all three of Fujitsu's M-series operating systems: OSIV/F4, which is in effect a more economical rewrite of IBM's MVS with full compatibility; OSIV/F2, which is Fujitsu's equally compatible version of DOS/VS; and OSIV/X8, which provides compatibility with the earlier Fujitsu 230/XS and X8 series.

The Jef package comes with four specially designed peripherals, and since it comes in selectable modules, can be used on even the smallest M-series machine, the M-130F.

Hitherto, Japanese mainframe users have had to work with output either in English or in Kana. English is very unpopular and Kana, which is a syllabary of 48 characters used to represent the Japanese language phonetically, is not much preferred, being difficult and laborious to read.

What users want, and what they will get with Jef, is Kanji. Kanji, used with some Kana characters, is the basis of printed matter in Japan, and is a set of Chinese characters or ideograms, each representing a word. There are 3,500 Kanji characters in universal use, but nearer 9,000 are needed to represent all the Japanese family names.

The latter are particularly important for applications involving name and address files and mailing lists, because, just as the postcode or US Zip code speeds the mail, so use of Kanji for addressing in Japan makes for speedier and, perhaps more important, more accurate delivery.

Needless to say, a Japanese has no idea how to pronounce a character the first time it is encountered. A pronunciation dictionary is used, listing characters in one of several possible ways.

One is by the number of pen strokes in the character and another is by sub-patterns within the character; the same elements and sub-patterns are present in many different complex characters.

There are several major modules within Jef. FDMS is a document generator, editor and manager; KUIN converts from Kana to Kanji text for such applications as printing a name and address labels; King is a document processing, accounting slips production and graphics output module; there is a package for producing output

in Japanese text from Cobol and PL/I programs — although it is not possible to program in Kanji — and there is a control program called Adjut (Advanced Japanese User Support).

Peripherals offered with Jef include a line printer, a display, a Japanese language matrix printer, and a data entry system.

The display has a 14" screen and puts up 24 lines of 40 characters in Kanji mode and the standard 24 by 80 characters in alphanumeric/Kana mode. For the former, a 24 x 24 dot matrix is used, and for the latter 24 x 12. Up to eight screens can be attached to the cluster controller.

The line printer is a laser device developed by Fujitsu itself; it is not directly related to the Siemens ND-2 which Fujitsu also sells, nor is it a product of the joint Fujitsu-Hitachi company Nippon Peripherals.

It is a 2,000 lpm device using a 30 by 30 matrix for Kanji and 30 by 24 for Kana. The matrix is the same as the one used on the display.

The data entry system is a key-to-floppy disc device with a 9in screen and two keyboard options: a board with 3,148 character keys and one which is activated by touching the desired character with a pen.

As well as running under all three current Fujitsu operating systems, Jef has interfaces to Fujitsu's own Alm database management system — which is quite different from IBM's IMS — and to the TSS time sharing monitor and AIF systems development program.

It may seem a retrograde step to give Japanese users the means to handle their work in an inefficient and purely national output form, but all attempts at reform of the written Japanese language have failed, and proponents of both Kana and the Roman alphabet appear to be ready to admit defeat.

For Fujitsu, Jef promises to bring major competitive advantages. Being so enormous, it should sell a great deal more hardware, and that is particularly important in the Japanese market where leasing is handled not by the manufacturer itself but by an independent body, JECC.

The advantage of JECC is that it enables companies to treat leased machines as if they were sales, realising the full value immediately; the disadvantage is that many machines are put out on very short leases, and JECC requires the manufacturer to buy back any machines returned from lease at a very high residual value.

This means that Japanese companies have to sell an ever increasing amount of hardware every year in order to stay ahead of the game.

Although several companies, including Fujitsu itself, offer Kanji processing on small business systems, Fujitsu is the first to offer a mainframe.

Hitachi gets into top gear for battle with 4300s

WITH the announcement of the Fujitsu M-1XOF and Hitachi M-1XOH series to do battle with IBM's 4300 line, all pretence that the two Japanese companies, nominally partners were offering complementary, as opposed to, competing products has vanished.

The Fujitsu machines are the M-130F, 140F, 150F and 160F, while Hitachi has announced an M-140H, 150H and 160H. The Fujitsu M-150F usurps a level previously only

occupied by Hitachi, and the Hitachi 140H invades Fujitsu territory.

The two lines do not actually compete models for models. The M-130F offers the performance and configuration options of the IBM 4331 at 0.8 times, and the 140F is 1.5 to 1.6 times as powerful.

The 150H is 1.8 to 1.9 times as powerful as the 4331, and the other machines line up against the 4341.

The 150H is 0.7 to 0.9 times a 4341, the 150F

is around 0.9 times, the 160H is 1.3 times and the 160F 1.1 to 1.4 times a 4341, offering up to six Megabytes of main memory, compared with four on the 4341.

Both lines feature new semiconductor technology in the CPUs, with Fujitsu using MOS LSI chips with 1,500 to 6,000 gates per device, and bipolar logic with up to 800 gates per chip. Both manufacturers are, like IBM, offering 64K bit memory chips.

The Fujitsu machines run under the two smaller Series M operating systems, OSIV/F2 which is compatible with DOS/VS but does not have the VSE extensions, and OSIV/X8, which provides compatibility with Fujitsu's previous line, the 230 series, which is not IBM-compatible.

Fujitsu has moved to follow IBM in unbundling its software, and is also making a new installation and maintenance charge for operating systems on the F models. Next month two software support centres open in Tokyo and Osaka, and six more will follow in other major cities.

Fujitsu has a formidable 5,000 software development and maintenance engineers and acknowledges an urgent need to generate more revenue from software.

It aims to double the 8 to 7% of turnover that software currently yields, but a major user education effort will be needed.

Tim Palmer reports on the Japanese scene

Net profits up over 30%

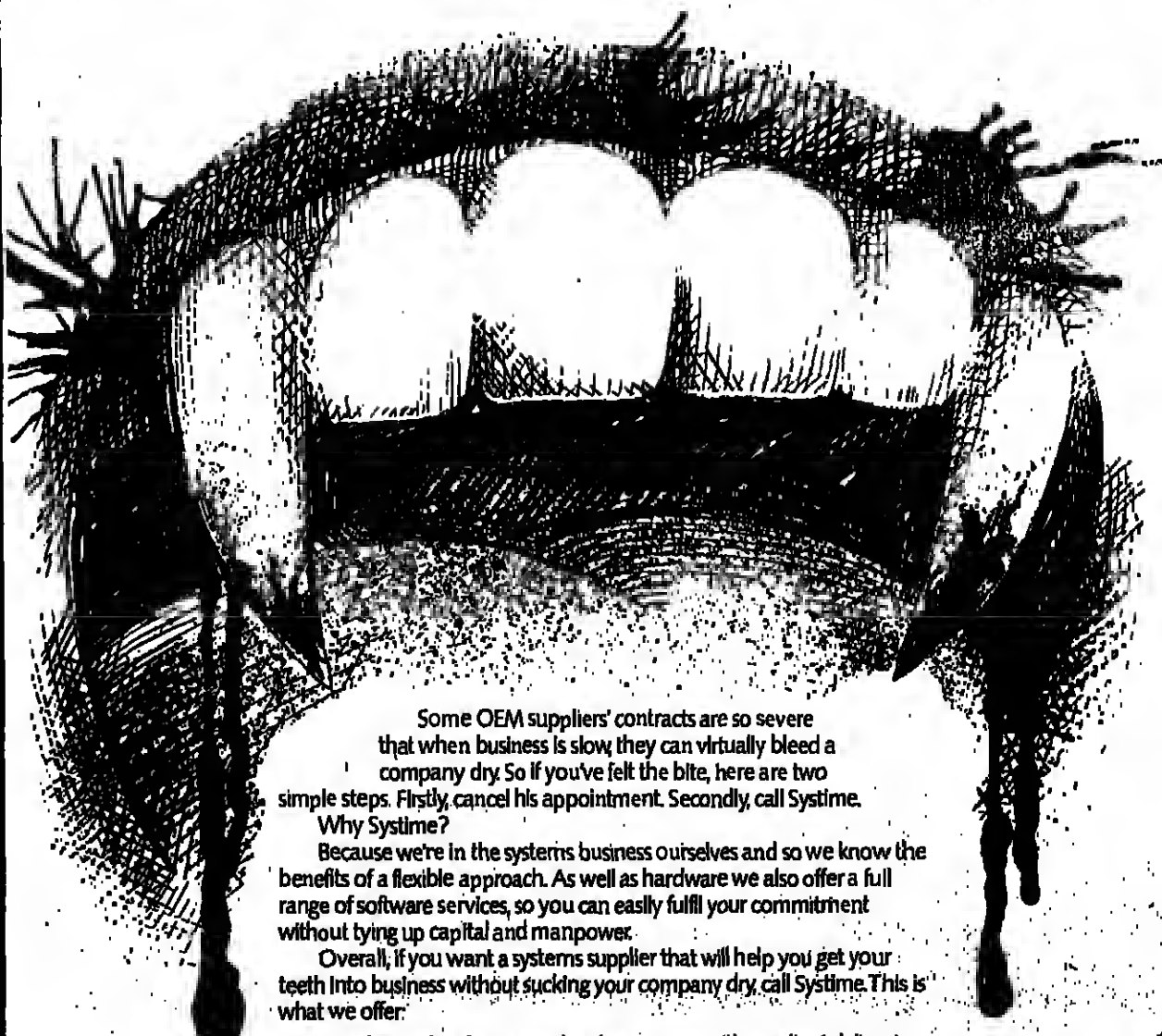
This should be a significant plus against IBM as Fujitsu is currently number two in Japan with about 19% of the market, after IBM with something over 25%.

Jef should also give Fujitsu a major advantage over competitors in several Asian markets.

IN the year to March 1978, Fujitsu's net profit rose 30.8% to \$48.7 million on sales up 13.8% at \$2 million. Computers make up 70% of Fujitsu's business, with telecommunications equipment accounting for the remainder. However the latter is the faster growing.

This means that ICL of Britain is now a significantly bigger computer company than Fujitsu and, with its average annual growth rate in excess of 20%, is pulling away. Fujitsu's exports rose 35.8% to 14.6% of sales, with telephone equipment predominating.

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MARKETVIEW

ICL's announcement of the 7700 information processing system at the Hannover Fair and Weng's announcement of its Integrated Information System at New York's NCC '79 have

followed hard on the heels of Information Studies' March conference on electronic message services, more commonly called "electronic mail." What types of message

transmission does this latest industry buzzword cover, who provides them and when are they cost-justified? In this Marketview, Fred Lamond sets out to investigate.

'Message transmission must be cost-justified'

ONE definition of electronic mail is that it is a system of communication whereby a human at one end sends to a human at the other and a message, some or all of which is handled electronically.

This clearly embraces both telegrams and telex services but the cost of these services, allied to the comparatively poor presentation of telex output, has not allowed this type of electronic mail to displace normal business mail for ordinary non-urgent correspondence.

The electronic mail prophets are claiming far more than these limited applications, however, for the latest types of electronic message transmission to hit the market. They include facsimile transmission; communication word processors; and, especially, electronic mailbox systems.

Facsimile transmission is remote photocopying. You feed in a document at one end of the line, and on exact reproduction emerges at the other end, complete with company letter headings, signature, and — in the case of technical documents — graphs and pictures.

Facsimile terminals have been in use for decades by newspapers transmitting photographs or whole page layouts

between editorial offices or to remote printing works, as well as by design engineers, architects, and similar users. But until recently, they have been used for ordinary business correspondence only in Japan — where the large Kanji character set makes it difficult to use keyboard transmission methods, such as telex — and to a lesser extent the US.

There have been two reasons for this high transmission costs, and incompatibility between different models.

A 96-bit by 96-bit resolution is currently regarded as the minimum for reasonable output presentation of business documents. It will thus take over 920,000 bits to transmit a single A4 correspondence page. As long as modulated digital transmission over the dial-up telephone network was limited to 1,200 bits per second, it would take over 12 minutes to transmit a single A4 page, which would cost more in telephone connect charges than postal rates over any distance. And it would also be unconscionably slow, and tie up the telephone for unacceptably long periods of time.

Since 1975, 2,400 bps modems have become available first on national and more recently on

the international dial-up telephone network. This has brought the transmission time for an A4 page down to 6 minutes, and even to 4 minutes on advanced facsimile terminals that indicate large unwritten white areas on the source document by control codes ("compres" feature). With this development, facsimile transmission time and cost have come down to an acceptable level, although

they are still substantially higher than postal charges, at least in Europe. Within companies equipped with leased line networks and 4,800 bps modems, it is also possible to send intra-company mail at 3 to 4 minutes per A4 page.

Until recently, there was no compatibility between different manufacturers' facsimile terminals, and sometimes not even between the same manufacturer's different models. The limited facsimile transmission applies essentially to intra-company mail, where the iden-

tity and therefore compatibility of facsimile terminals at the different locations could be controlled.

In 1977, however, CCITT (Consultative Committee of International Telephone and Telegraph common carriers) agreed transmission and interface standards for three "grades" of facsimile terminal: 1. 4 to 6 minute/page terminals interfacing to 2,400 bps modems,

publishing "telex" directories of subscribers equipped with CCITT standard terminals.

This standardisation has allowed facsimile transmission to take off in Europe, for inter-company as well as intra-company business mail. It is still more expensive than ordinary mail for business correspondence outside the immediate local area, but it is receiving a boost from the growing unreliability of postal services, and the resulting uncertainty as to when a letter posted tonight will reach its destination.

The communicating word processor is the facsimile terminal's main competitor in the electronic mail stakes. Like the traditional telex terminal, it can only transmit alphanumeric character strings entered on a keyboard before transmission — no company letter-headings, therefore, no graphs, illustrations, or binding signatures.

But it has the advantage of requiring only 8 bits to transmit each alphanumeric character in the ASCII code, and only 20 seconds to transmit the 5,000 characters that would fit on a densely typed A4 page over a telephone line equipped with 2,400 bps modems. Communicating word processors are

thus much cheaper in terms of dial-up telephone charges than facsimile terminals.

Compared to the traditional keyboard-oriented telex, communicating word processors offer 15 to 30 times faster transmission, and thus cheaper telecommunications charges, even though telex connection charges are lower per minute than telephone charges. They also offer correspondence quality output with both upper and lower case alphabetic characters, and appropriate layout control on the output copy.

This requires, however, a more complex set of editing and page control codes than the simple "carriage return" and "line feed" of the traditional telex terminal. In the absence of any agreed international standards, each word processor manufacturer has defined his own editing and control symbols within the ASCII code combinations set aside for these. As a result, different manufacturers' communicating word processors have not hitherto been compatible with each other, so that these systems have only been used for intra-company memos within a company which

could control the identity and compatibility of the word processors used at all locations. CCITT is now preparing to do for communication word processors what it has recently done for facsimile transmission: define an international "telex" standard of control codes and hardware as well as software interfaces. Target date for bringing the new standard into use is 1981.

Will this be enough to cause a widespread swing to telex standard communicating word processors for inter-company as well as intra-company mail? On current form this is doubtful. For, as its name implies, a communicating word processor is a specialised type of word processor. It is only likely to be adopted for intra- or inter-company communications purposes by firms that have already installed WP systems successfully for their internal document preparation.

Word processing systems are spreading but slowly, well below anticipated market predictions, even in high-wage countries like the US and West Germany. This is partly because they have been sold hitherto as specialised systems, usable for nothing else, and in that form are still very expensive compared with the traditional electric typewriter. Manufacturers have sought to justify the additional cost in terms of staff savings — a socially dubious argument at a time of rising unemployment — which could readily be achieved only within typing pools.

The attempts by some astute systems designers to deprive executives of their private secretaries, and to put these all into WP pools in order to cost-justify the new hardware, have done nothing to endear WP to either executive or clerical staff.

The WP market will really take off only when these systems can cost-justify themselves on the private secretary's desk, and be seen there as a means of job enrichment — relieving her of boring retyping letters and documents — instead of job de-skilling, by putting her into a word processing pool.

For this to be achieved, WP systems will have to come down in price to little above the price of an electric typewriter, which may take another four years despite the rapid fall in the price of semiconductor components.

Such a system could cost-justify itself sooner, however, if text creation, amendment and automatic reformatting were not its only function. Since it normally includes a display screen, keyboard, and programmable microprocessor or minicomputer controller, it could do duty as an online computer inquiry/update terminal. In executives' offices whose work involves interrogating the computer directly occasionally, or originating some form of computer input. Such a terminal would be a multi-purpose rather than a dedicated WP terminal.

This is precisely what the new ICL 7700 Information Processing terminal announced in April, and the Wang Integrated Information System (IIS), announced at the June NCC in New York, aim to be. With only two key-display terminals per ordinary executive office, rather than in a WP pool, it can be used for stand-alone word processing, but it can also be used to access an ICL 1900 or 2800 DME host processor, both for standard text retrieval from or amendment on a text library, and/or for ordinary data processing file inquiry and/or updating.

WP must enrich clerical jobs—not deskill them

From page 20

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For this to be achieved, WP systems will have to come down in price to little above the price of an electric typewriter, which may take another four years despite the rapid fall in the price of semiconductor components.

Such a system could cost-justify itself sooner, however, if text creation, amendment and automatic reformatting were not its only function. Since it normally includes a display screen, keyboard, and programmable microprocessor or minicomputer controller, it could do duty as an online computer inquiry/update terminal. In executives' offices whose work involves interrogating the computer directly occasionally, or originating some form of computer input. Such a terminal would be a multi-purpose rather than a dedicated WP terminal.

This is precisely what the new ICL 7700 Information Processing terminal announced in April, and the Wang Integrated Information System (IIS), announced at the June NCC in New York, aim to be. With only two key-display terminals per ordinary executive office, rather than in a WP pool, it can be used for stand-alone word processing, but it can also be used to access an ICL 1900 or 2800 DME host processor, both for standard text retrieval from or amendment on a text library, and/or for ordinary data processing file inquiry and/or updating.

By adding WP capabilities to its VS business computers and Basic to its OIS word processors, Wang has made both its ranges of terminal-orientated systems equally multi-purpose.

Integrated information processing terminals in ordinary offices on ICL and Wang lines also have the advantage that their users can originate electronic mail messages on their terminals and transmit them, without any manual transcription, in a WP pool or the telex room. They ought also to be able to receive them directly, but this raises complex issues of switching and terminal availability.

Apart from the IBM 1750 and 3750 (and the TN 8030 in West Germany) none of the new stored program controlled electronic PABXs appearing on the European market have yet provided for special digital interfaces for digital terminals. When terminals share a line with the voice handset in the same office, the PABX must have a means of indicating whether a connection is seeking to establish with that line is aimed at the terminal or the voice handset.

When an incoming message is waiting to be transmitted to a multi-purpose as distinct from a dedicated communications terminal, that terminal may be busy on a local stand-alone word processing task. Should that task be interrupted to receive the incoming message, or the incoming message wait? If the incoming message has priority, how can the local word processing task be preserved to be easily resumed after reception of the message? And, if the local task has priority, is the remote transmitting terminal to be kept waiting all this time, and thus kept from other urgent tasks of its own?

It is precisely to resolve all these questions that the principle of the electronic mailbox has been invented. ICL has announced optional mailbox software as part of its Wordskil package on the 1900 series concurrently with the 7700 announcement in April, and Wang did the same at the NCC when it announced the new IIS facilities in its range.

In electronic mailbox systems, every user has a virtual "mailbox" within the host DP system's backing disc storage. On ICL networks, the host 1800 or 2800 DME system manages the mailbox, on Wang networks it will be a VS business computer.

Any user wishing to transmit a message from his multi-purpose terminal to any other user addresses it to that user's mailbox address on the host DP system. Provided the DP system's communication lines are not saturated, he will be able to transmit his message immediately, irrespective of whether the recipient's terminal is free to receive it.

Electronic mailbox systems need not be confined to a single location served by a DP system or business computer. The widely dispersed offices and factories of a single company can communicate with each other in the same way, via a leased telephone line network, or even overnight on the dial-up network. In the latter case, each site must be equipped with its own computer system and programmable PABX, the computer instructing the PABX to set up the appropriate dial-up connections at the appropriate time to transmit the previous day's long distance intra-company mail in bulk at cheap rates.

Some enthusiastic electronic mail advocates in the US believe that electronic mailbox systems can be made to replace many

internal telephone traffic as well. Executives will be interrupted less frequently in their work than they now are, and their efficiency and enjoyment of their work will increase correspondingly.

This strikes me as a somewhat doubtful proposition. Electronic mail messages require to be keyed, which means that an executive will call in his secretary much more frequently than now — thus lowering her concentration and efficiency — or do the keying himself, which few are yet accustomed or willing to do. Common sense suggests that most executives will use the electronic mailbox system only on occasions when they cannot immediately get hold of the person they were trying to phone, and even then it will be only to type short messages such as: "Please phone me asap about..."

New York's Citibank, trying to be at the leading edge of this technology as well as of dis-

tributed processing, is introducing an electronic mailbox system for its account executives, and is said to be planning to increase their workload in the proportion by which it feels their efficiency would be improved if they made full use of it. They will thus be forced to use the new system in preference to internal telephone calls, face-to-face meetings, and departmental conferences in order to be able to cope.

This is as bad an example of making people fit a system in order to make it pay, as the attempts by some US companies to push private secretaries into WP pools. Nothing could more quickly bring electronic mail and the whole concept of office automation into disrepute with executives and clerical staff alike. If electronic mailboxes cannot be cost-justified by any other means, then clearly their day has not yet come, and their introduction should be postponed until it becomes

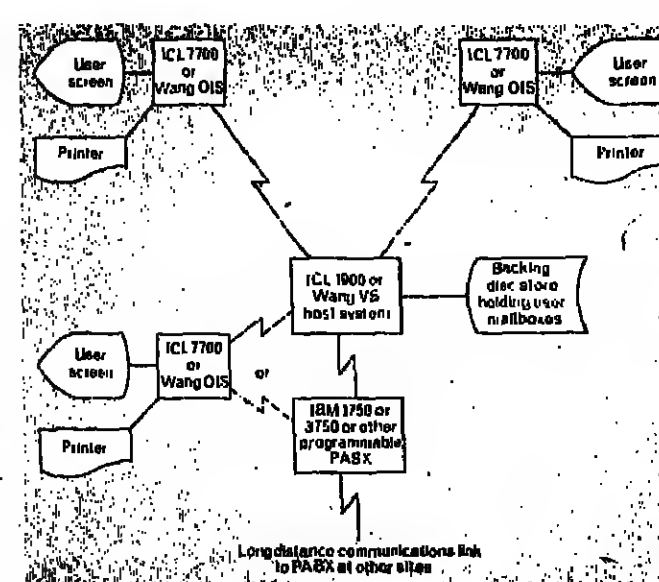


Figure 1. Typical electronic mailbox network design.

economical without putting excessive work pressure on users. Whether cost-justified or not, electronic mailboxes can only be introduced currently for internal communications within a single company or group sharing one of more DP systems. But their use for inter-company traffic and even by private individuals is not so far away, at least in Britain. The British Post Office has already announced plans to provide electronic mailboxes on its Prestel computers for subscribers in Phase II of Prestel development, some time in the early 1980s.

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**Parliament
delayed**

THE new Prime Minister of Canada, Juc Clark, who included Freedom of Information as one of the major planks in his campaign (CW, April 19), is delaying the re-opening of Parliament until late September in order to prepare this legislation. The new government has adopted largely unchanged the model Freedom of Information Bill proposed by the Canadian Bar Association. This provides for, among other things, judicial review over questions of what should be made public.

\$25m Sanders deal

CURRENTLY negotiating acquisition of plotter specialists Calcomp (CW, May 31), Sanders Associates has announced repeat business from IBM worth \$25 million over the next two years for graphics display systems.

Fibre-optic TV link

A FIBRE-OPTIC transmission link has been installed in Long Island, New York, to relay TV signals from a microwave receiving station to a conventional cable television distribution centre 2.7 km away. Using a three-fibre cable with one optic and two repeaters, the link was installed overground on existing poles.

£14m of telecoms

STROWGER telephone exchanges worth a total of £14 million have been ordered from GEC Telecommunications by hospitals in the UK, Kenya and Abu Dhabi.

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COMPUTER WEEKLY INTERNATIONAL

**£250,000 system
for Dubai hotel**

THE spectacular building boom in the oil rich states of the Middle East is typified by the Galadari Galleria project in Dubai, which includes a 475-room Hyatt Regency Hotel, 387 luxury apartments, a revolving restaurant and an ice rink among its many impressive features.

The hotel will be equipped with a computer and the system selected is the Micor property management computer developed in the US by Micor Inc of Phoenix, Arizona, a subsidiary of the Ramada hotel chain.

The Micor system will be supplied, installed and maintained by International Aeradio Ltd, the UK based firm which is already well established in the Middle East as a supplier of aviation and communications systems and services. IAL markets Micor systems in Europe and the Middle East and sells through sub-agents in West Germany, Scandinavia, Austria and Portugal.

Micor systems are based on the Texas Instruments 880/10 minicomputer. The Hyatt Regency's Micor, costing £250,000, will come with software and terminals to handle jobs like reservations, room management, billing and accounting.

● The 475-room Hyatt Regency Hotel in Dubai is pictured right under construction.



**Nippon revamps business
micro for US market**

AFTER four years' gestation, Nippon Electric of Japan has introduced a completely re-engineered version of its NEAC-100 business microcomputer on to the US market.

Although built around the same µCom 1600 16-bit microprocessor as the NEAC-100, the American machine, called the Astra, has a new transaction processing operating system written in the US, and is programmed in Basic. The Japanese version, designed for the South-East Asian market, and also sold in Australia by Honeywell, is aimed primarily at the Cobol batch programming market; however a new Cobol is being developed for the Astra in the US.

Nippon Electric was determined to have a fully fledged product to market before it launched, so a wide range of accounting packages has been developed, some of the work

being done by NEC in-house in the US and Japan, and some being farmed out to US software houses.

As launched, the product is aimed at the bottom end of the transaction processing business systems market, at users wanting three to six terminals and about 40 Megabytes of online storage. Base price for the Astra with processor and console, one terminal, 128K-bytes of memory, floppy disc storage, the operating system, Basic and utilities, is \$9,000. Adding a second floppy drive and printer brings the price to \$14,000.

Apart from the tape drive,

which comes from Pertec, and the tape cartridge drive, which comes from DEI, all the peripherals come from Nippon Electric, and the disc controller, floppy drive, line printer and terminal each has an integral microprocessor, which is NEC's version of the Z80. Maximum number of workstations supported is 32, and disc drives, all in Winchester technology, come in 30, 40, and 80 Megabyte versions with 320 Mb maximum per system.

Most noteworthy feature of the system is the display workstation, which has 32K-bytes of integral memory, has 16 pro-

grammable function keys plus another ten systems keys, fills in a very fast 0.016 seconds, and uses a 7 x 11 dot matrix for characters, but has a 9 x 16 cursor matrix, which allows unusually solid graphical displays to be put up. Other advanced features include multiple separately addressable areas, so that data in the centre of the screen can be scrolled, for example, while other data is displayed in independent areas at the top and at the bottom of the screen. Individual characters and fields can be separated by thin lines which fit into the existing gaps between characters.

Fujitsu cautious of American debut

ALTHOUGH Fujitsu made its debut as an exhibitor at the National Computer Conference in New York, the company is still some way off a major US marketing thrust but says that if it did so, it would have to be in some kind of partnership with a US company. It could be either a straight OEM agreement or involve the formation of a joint subsidiary.

Amdeh, Fujitsu's 28%-owned partner on large systems, is uninterested in the lower and 370-compatible market, but several

leading companies are interested in entering the business.

At the NCC, the company showed a range of OEM disc drives and printers, and highlights of its offerings included a 14 in diameter 186 Megabyte drive for which only Control Data has a competitive product. The stand display also highlighted a 6,000 Megabyte mass storage system from Nippon Peripherals, Fujitsu's joint company with Hitachi. Called the 6620, it is advertised as a future US OEM offering in its announcement of M-

**Chinese deal for CII-HB may
jeopardise Russian project**

WHILE preparing for collaboration talks with the Soviet Union in September (CW, June 14), CII-Honeywell Bull of France is still in line for major business in China; but the hostility between the Russians and the Chinese is likely to mean that one or the other project can go ahead, not both.

In China, CII-HB is one of 12 French companies participating in a package of proposals put by the French government to the Chinese late last year (CW, December 21, 1978).

The talks with the Chinese have covered CII-HB building one or more computer plants in China, as well as licensing Chinese manufacture of computers and components, and selling large systems.

The Chinese are interested in the full CII-HB product line, but the French are stressing the level 61 minicomputer, the small

Level 61 business computers and the medium-scale Level 64 mainframes; the latter two are entirely French-developed.

With regard to the Russians, CII-HB stresses that joint development of a new line of mainframes to succeed the Comecon countries' Rjad 2 line in the mid-1980s, is simply one idea which has been floated by the Russians.

Cuts out waste

A MALAYSIAN civil engineering company, Mudajaya Construction, is buying from GMS Computing of Sheffield, a software package which minimises waste in the cutting of steel bars, colls and tubes. Written for IBM 370 computers, the program is being converted to run on the construction company's old IBM 1130 machine.



**Prospects
bright for
Siemens
printer**

A DECISION by Bank of America to banish Impact matrix printers from all its offices because of the noise they make, promises a bright future for devices like the Siemens PT-80 Ink-jet matrix printer.

The legal problems over patent infringement by Siemens have been resolved. The company had been accused by Silonix of copying the Silonix ink-jet head, but once the Siemens part had been disassembled, the claim was proved to be fallacious. Siemens says that, in any case it started development years before Silonix.

The PT-80 runs at up to 270 chps. This and the very low noise are among its main selling points, and it has been widely evaluated for business systems as well as word processors. Trial orders have come from IBM, Tally, Dataproducts, Control Data and Xerox.

**Toyota orders
Univac system**

A \$10 MILLION Univac 1100/83 large-scale mainframe will be a key element in the design of the next generation of cars from Toyota.

The machine will be used for a wide range of engineering activities, notably computer-aided automobile design. Toyota also has a Univac 1108 at one of its factories, and an 1106 in its research laboratory, and both will be linked to the 1100/82, along with 100 Interactive and graphic terminals.

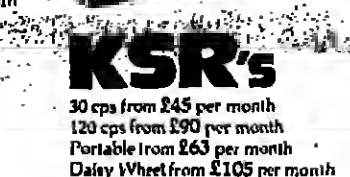
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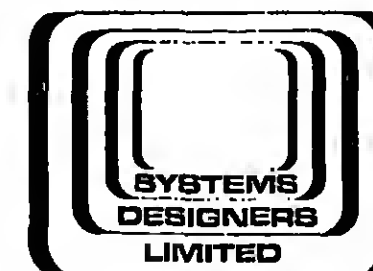
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OPERATIONS STAFF

which contains the word...
...and scientific-oriented language.
...program, proclamation—pro, for, grammar, a letter.)
...progress, pro'gres, sometimes (esp. in U.S.) pro',
...n. forward movement: advance: continuation:
...advance to something better or higher in
...development: gain in proficiency: course:
...passage from place to place: a procession: a
...journey of state: a circuit.—v.i. progress' (for-
...merly, as *Shak.*, pro'), to go forward: to make
...progress: to go on, continue: to go in progress,
...in state.—v.t. (obs.) to traverse.—n. pro-
...gress (pro-, pro-grad'ion), m.

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It's a fact of life that many people are in jobs that offer them little chance of any real career progression. Progression into positions with more responsibility with the chance to gain valuable experience and, of course, better rewards.

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RPG 11: ANAL./PROG. PROGRAMMER WEST LONDON (System 3) to £7500
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Applications (three copies) with full curriculum vitae and naming three referees should be sent to the Academic Registrar, Science and Engineering, University of Birmingham, P.O. Box 363, Edgbaston B15 2TT. For more information, please refer to page 28.

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Starting salary to £9500 + benefits.

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VTAM; VSAM; RACF; DB Prototype
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R. M.O. McCulloch
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Consultants/Managers	Neg.	Consultancy/Managerial Services	Middle East/U.K.	Any	O.P. professionals preferably with a degree are required by our clients to provide a wide range of consultancy/management services throughout the Middle East. A knowledge of Arabic is preferred.	26/2
Analysts/Programmers	to £8K + benefits	Insurance	City	IBM OOS	If you have an IBM Programming background with COBOL and/or ASSEMBLER and preferably previous experience in insurance, our clients can offer you the opportunity to develop a wide range of applications.	28/3
Sales Personnel	Packages up to £15K	Bureau and Software House	South East Home Counties		In addition to experienced packages sales personnel, we have opportunities for O.P. and non-D.P. Staff wishing to progress into sales and pre-post sales support.	28/4
Technical Analysts	to £8K	Avionics Industry	Scotland/Surrey	Any	A market leader in the field of advanced electronic systems seeks well-qualified computing/or staff to provide support/development services to their U.K. clients.	20/5
Contract/Permanent Programmers	to £20,000	Consultancy Services	Holland/Germany	IBM OS/008	Programmers with 3 years + experience of COBOL/PL1 and Assembler are offered both permanent and contract positions with our European clients.	26/6
Systems Programmer	from £7,000	Technical Consultancy	London/Home Counties	Minis/Micros	Our clients offer first-class opportunities to Technical/Systems programmers with 4 yrs. + assembly/machine code experience, preferably on minis/micros in the areas of telecoms, compilers, process control.	28/7
Operators	£4,000	Bureau	Herts.	ITEL/370 OS HASP	Our clients need presentable operators who are capable of working with their bureau customers.	28/8
Software Development Programmers	to £8,000 + benefits	Manufacturer	Surrey/Sussex	Minis/Micros	Programmers with 2 yrs. + previous experience software development experience are urgently sought by our clients to develop a wide range of systems in Assembler/Algol.	26/8

INFORMATIX UNITED KINGDOM AND OVERSEAS INDEX

Haven Informatix Limited

24 Grays Inn Road London WC1X 8HR Tel: phone 01-831 6055 Telex 299539 HAVEN G

Project Leadership

real-time systems design

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£8,000

+Generous relocation expenses

Growth towards Management

You will lead, motivate and control a team of project designers and programmers in the development of complex systems. This, and your effective liaison with technical and user departments, will prepare you for multi-project responsibility later.

Stimulating Environment

Our Client is one of the largest telecommunication equipment manufacturers in the U.K., and part of a multinational Corporation. They are, in particular, a world leader in Submarine Systems, and offer unusually varied and stimulating projects. The substantial Real-time system serves the entire group and employs Structured and On-line Programming techniques.

A programming background...

... of some considerable depth is essential, including both high (COBOL) and low-level languages. Qualities of leadership and initiative are also sought.

Advanced Technology

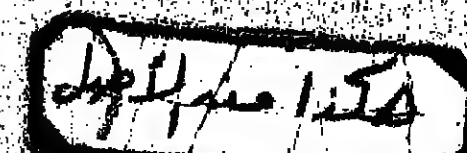
This represents an opportunity to make a real contribution to systems reflecting advanced concepts within today's telecommunications revolution.

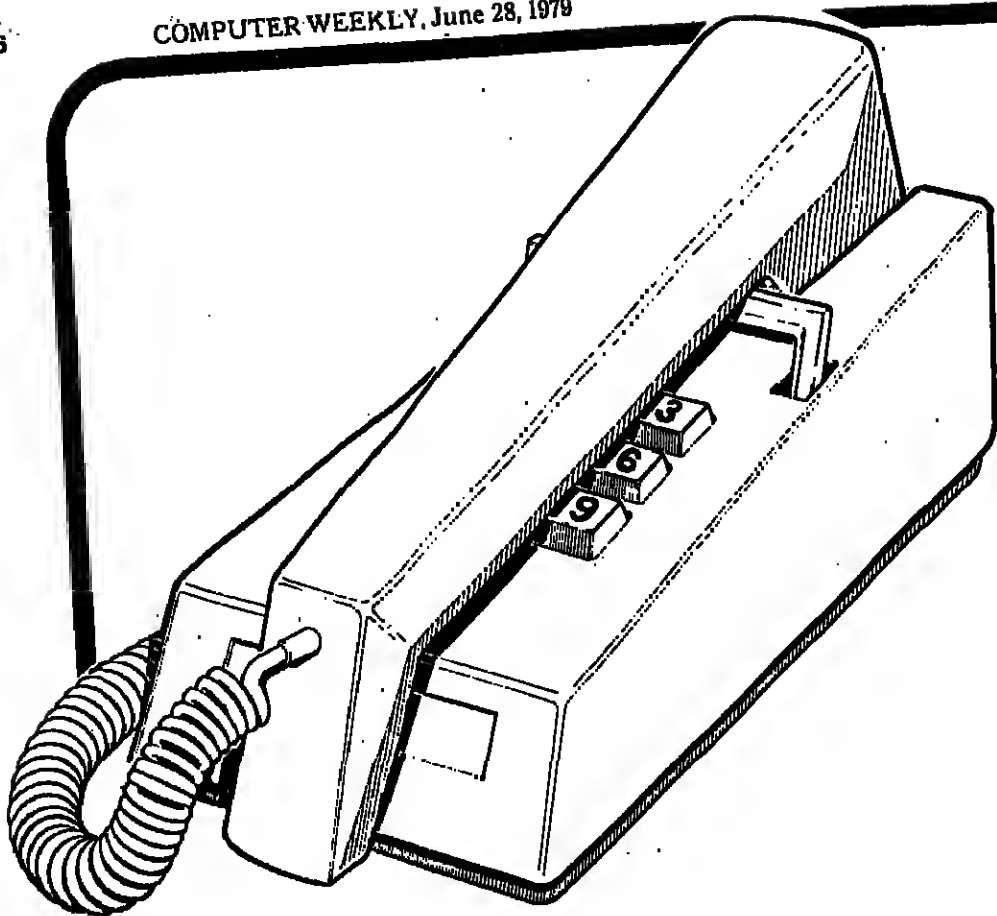
Contact, in confidence, Dave Scarlett - on 01-935 0671 or (evenings and weekends) 01-540 3549.



Specialist Computer Recruitment Ltd

London 01-935 0671 3 Mandeville Place, Wigmore Street, London W1M 6LB
Birmingham 021-236 3761 35-37 Great Charles Street, Queensway, Birmingham B3 3JY
Manchester 061-833 0427 Blackfars House, The Personage, Manchester M3 2JA





MICRO-PROCESSING FOR TOMORROWS WORLD IS WITH ITT TODAY

SOFTWARE SUPPORT PROGRAMMERS

THE COMPANY

ITT the International Telephone and Telegraph corporation was founded in 1920 and is now one of the world's largest businesses. ITT is a diversified, multi-product company with manufacturing and/or sales activities in 86 countries.

To maintain its current leadership in many areas of telecommunications, electronics, and other fields ITT needs specialised units with the capability to meet the rapidly changing demands of the telecommunications market thus IDEC — The International Data Engineering Centre.

THE LOCATION

These appointments are based in modern offices at Potters Bar which is in the middle of delightful Hertfordshire countryside. It is easily commutable from London and surrounding areas.

THE VACANCIES

IDEC are looking for people to join their expanding team of professional programmers, which is currently developing software aids for testing multiprocessor systems using the INTEL 8080, 8085 and the new 8086 microprocessors. The software is then simulated on an IBM 370/158.

THE REQUIREMENTS

They would like to talk to you, if you have two years programming experience gained in a mini or micro environment, and are interested in developing future technology. As the Software is developed on an IBM machine, your knowledge of any high level language coupled with the desire to move into the technical field could be of interest. This experience need not necessarily have been gained in an IBM installation, although it would be useful.

THE FUTURE

Horizons are only limited by imagination. ITT has a record of past innovation and achievement; present investment in research and development will help fashion the shape of things to come.

IDEC
A Development Centre for
ITT Business Systems

This is what the future in microprocessing could mean for you!

- * Starting salaries to £8000.
- * At least 23 DAYS annual leave.
- * Discounts on many ITT products, such as television sets, stereophonic and audio equipment.
- * Flexible working hours.
- * Luncheon Vouchers.
- * Relocation expenses.
- * Superb sports and social club facilities.
- * Modern offices set in the countryside.

The future begins now, so why not pick up the phone and call Basil Pearce on 01-439 7871 for further details. If this is not convenient why not cut out the phone and post it.

Ref: BP 25/1

PLEASE SEND ME FURTHER DETAILS ABOUT THE FUTURE WITH

Name _____

Address _____

Tel. No. _____

Datascene Recruitment Ltd
Sceptre House
169-173 Regent Street
London W1R 7FB

datascene

01-439 7871
24 hour answer phone

Data Processing Manager Dover

Townsend Thoresen is part of the European Ferries Group — the largest independent ferry group in Europe. Our twin ICL 2904 site is situated in Dover and we currently seek a mature professional to manage our data processing department through major enhancements to our data processing function.

The person we seek must have a minimum of 10 years working in data processing and must have already demonstrated his/her ability to control a data processing department of 25/35 people. A firm background of ICL hardware and software (preferably 2903/4) is also essential. Experience in running communications networks is desirable.

We currently dedicate one ICL 2904 to a communications network for processing reservations. Batch processing for this reservation system and also bought ledger, payroll and freight systems is carried out on the second ICL 2904. The installation has recently gone through a period of considerable growth and further enhancements to hardware are currently being considered.

Remuneration package is currently under review but will include company car and concessionary travel and other large company benefits.

Reply initially, sending c.v. and indication of salary required to:—

Mr. J. J. Moran, Personnel Manager

TOWNSEND THORESEN
The European Ferries
CAMDEN CRESCENT · DOVER · KENT

Analyst/Programmers to £5,454 (pay review pending)

Our twin ICL 1904's are being replaced by twin 2960's operating under DME. We are looking for staff who will undertake support work on existing systems, with future opportunities to work in teams developing new systems related to the mail order industry. You must have at least 1 year's PLAN and/or COBOL experience and be prepared to be trained in PLAN (if necessary). Opportunities also exist for people interested in working on DEC minis (the necessary training will be given).

We offer:

- a negotiable salary up to £5,454 with potential for promotion to senior scales rising to £6,943 (pay review pending).
- working for an expanding department housed in modern offices
- paid overtime
- flexitime
- staff discount on all catalogue goods.
- Full relocation expenses will be paid where appropriate.

For more information phone Chris Davis on Freephone 5092 or write to:

Mrs. C. A. Davis
FREEPOST, Grattan Warehouses Ltd.,
Anchor House, Ingleby Road,
BRADFORD, BD9 2XG,
West Yorkshire

Grattan

Borough of Bournemouth Systems Analyst

Salary will be on the scale of £5,080-£6,702 inclusive of supplement.

Applicants should have at least two years' experience in computing, including programming, and preference will be given to those possessing a professional qualification or degree.

The person appointed will play a leading role within a development section of seven staff designing and implementing on-line systems using a Honeywell 64/20 computer and a network of terminal equipment. Assistance with disturbance and removal expenses together with lodging and travelling allowances. Temporary accommodation may be available.

Application forms may be obtained from the Personnel Officer, Town Hall, Bournemouth, or telephone Bournemouth 22085, Ext. 338, to whom they should be returned by 8th July, 1979.

Bournemouth
BOROUGH COUNCIL

UNIVERSITY OF EXETER LECTURER IN COMPUTER SCIENCE

Applications are invited for a lectureship in the Department of Computer Science, Exeter, from October 1, 1979.

Candidates should be qualified persons working in any area of computer science. Specialisations which are of particular interest, but which are not intended to make up an exhaustive list, are: data-base computation and theory; artificial intelligence; computer architecture and systems; theory of programming languages and semantics; operating systems; distributed computing and networks.

Commanding salary will be within the range £4,233-£5,366 per annum (under review). The post is subject to a probationary period not exceeding three years with the prospect of permanency thereafter. Further particulars may be obtained from Miss Doreen Watson, University of Exeter, Northcote House, Exeter EX4 4QJ, to whom applications (5 copies) should be forwarded by 23rd July, 1979. Please quote reference No. 1271.

Recruitment LOGISTIX In Informatics

Programmers + Analysts Central London + Thames Valley

Salary to £8K + Car

Two divisions of a prestige Systems and Software Development Group are seeking additional personnel at the level of Programmer, Analyst/Programmer and Systems Analyst. Generally speaking, applicants should have experience in one or more of the following applications areas—Commercial: Stock/inventory control, budget/sales forecasting, personnel records and pension fund. Technical: Compiler design, operating systems development, communications software. In both divisions you will be given opportunities to work in either a pre or post sales environment. The Company offers an outstanding portfolio of Company benefits including a minimum of 4 weeks' annual holiday. Group medical insurance and life assurance schemes are already in operation whilst more senior staff qualify for an annual bonus (currently in excess of 10% of salary). Full removal assistance is available where appropriate. Local interviews either in Reading/Maldenhead or Central London can be organised. Ref: A28/6

Financial Analysts City of London

Salary to £10K O'seas Travel

Your Banking or Investment expertise as a Business or Systems Analyst will be highly rewarded by this "blue chip" City institution. It's considered a definite plus point to have had recent or current exposure in an environment using both mainframe and mini-computers (preferably distributed processing). The successful candidate will be part of a project team of 6 to 8 comprising Project Manager, Analysts (at senior and junior level) and Programmers developing and implementing several new systems in the areas of Foreign Exchange and Portfolio Management. This position will appeal particularly to those people keen to travel within Europe and who may already speak French or German. Complete fluency in a foreign language is not a pre-requisite but is an asset. Local interviews will be held in early July and offers made within 10 days. Ref: B28/6

Real-Time Specialists Rhineland Germany

Salaries: to £17K

Important forefront developments in Real-time on-line software emanates from high technology Western European Companies. We are seeking Systems and Software Specialists on behalf of a West German client engaged in the areas of Industrial Control Systems, Liquid Flow Monitoring Systems, Robotics/Artificial Intelligence. Existing and new project teams require Consultants, Systems Designers, Senior Analysts, Analyst/Programmers and Programmers with direct relevant experience in at least one of the above spheres of activity. In particular, extensive Mini Computer Assembler experience is essential and a degree or equivalent would be an advantage. You will be certain to contribute valuable expertise to this prestigious group whilst expanding your own threshold of experience through working closely with other professionals at your own level. Our client will pay full relocation expenses for you and your family in addition to meeting the costs of temporary accommodation pending location of permanent housing. Ref: C28/6

Assembler Programmers Spain

Salaries: £12K—£15K

Our client is a major International Systems and Software Development Group recognised as a market leader in its field. Owing to continued expansion in a wide variety of applications areas including Data Communications and Process Control they now require additional experienced Assembler Programmers. Emphasis will be placed on technical achievement and in-depth experience in the areas of activity above. Whilst a degree or equivalent qualification in either Computer Science or Mathematics is desirable, significant relevant experience will be considered in lieu. Of essence is a solid Assembler background on Univac 418/494 series or Univac 1100 series. The project will be based in Madrid for at least one year after which you will be given an opportunity to relocate to either Scandinavia or another E.E.C. country. Interviews will be held in London within the next 4 weeks and offers of employment will be made within 10 days of interview. Ref: D28/6

Cobol Programmers West London

£5.5—7K

Our client, a U.S. multinational corporation who are leaders in their field are about to install sophisticated E Series IBM hardware. As a result of this expansion they require COBOL Programmers with 2-4 years experience to work on the implementation of a new distributed processing network. Training will be given in on-line/Real-time applications and projects will include stock control, order processing, payroll and financial systems etc. This is an excellent opportunity for candidates to gain experience in the implementation of a new system or for those wanting to progress into the area of Systems Analysis and to develop their skills in the areas of T.P. and Database applications. Additional to above average salaries, benefits include 4 weeks holiday, free BUPA, staff restaurant and Life Insurance scheme. Interviews will be held throughout July and offers made within 7 days. Ref: E28/6

Logistix, Freeport 32, London W1E 3YZ

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London W1N 9HA

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01-491 4636

LOGISTIX

Telex 28800

£10k+Appointments £10k+Appointments £10k+Appointments

MYRIAD

SYSTEMS MANAGER

To £11,000

C. LONDON

Our client is a large independent public company and market leader in their field. Major investment in D.P. has recently been made to cope with ambitious growth plans for the future. A stimulating and challenging opportunity now exists for an additional Systems Manager who will play a major role in the expansion of computing facilities offered to associate companies within the group.

The Systems Manager will manage a competent team of Analysts and Programmers involved in the development of a variety of integrated financial applications. Implementing systems on a project oriented basis the position will entail a high degree of user contact and could involve a limited amount of travelling throughout Europe. The activities of the Systems team also extend to providing unique applications solutions to user problems involving the use of specialist software and communications techniques.

Applicants should be able to demonstrate a progressive and successful record of systems implementation and be familiar with sophisticated project estimating techniques and development standards. It is essential that candidates possess experience of large ICL 2900 software and have the ability to manage an energetic and dynamic team in a highly user oriented organisation. Ideally aged 30 to 35 with a degree or professional qualification applications from candidates with experience of financial systems in a communications environment would be particularly relevant.

Located at their computer centre in London from which operations throughout the UK are controlled, the company offers a challenging and progressive future with potential expansion to subsidiary companies throughout Europe. In addition to first-class conditions of employment a salary in the region of £11,000 p.a. will be offered.

Ref. E1/2806

MYRIAD APPOINTMENTS LIMITED
30 Fleet Street London EC4Y 1AA
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COBOL PROGRAMMERS European Assignments

IBM DOS or OS

PROGRAMMERS and SENIOR PROGRAMMERS to £14,000
SENIOR PROGRAMMERS with CICS or IMS EXPERIENCE to £18,000

Interesting Projects
Database Development
High Rewards (£££)
Equity Participation
Training Opportunities

Programmers with two or more years' COBOL experience are required to work on challenging and interesting projects as part of Marcol's European team who are achieving substantial success on the Continent. Preference will be given to those applicants who have DOS or OS COBOL experience, however any mainframe COBOL programmers who are willing to undertake a three- to six-month training program in the U.K. should also apply now.

Unlimited career prospects are waiting for you at:

MARCOL

Total capability from the Group
60 Queens Gardens London W2 3AF Tel. 01-402 9355 (24 hours)

For full details and a confidential interview please ring or write:
DEREK ASHLEY or PENNY BAILEY

£10k+Appointments £10k+Appointments £10k+Appointments

KUWAIT

attractive packages

OPERATIONS MANAGER

Twin B1728

around £10,500 TAX FREE

- + Bonus
- + Car Allowance
- + Fully Furnished Apartment
- + Schooling and Travel Allowances

KUWAIT has a hot but acceptable climate. Many facilities are available, including sports centres, English TV and reasonably priced restaurants. The large expatriate community is socially active, there being theatre groups and frequent parties. Costs of food and household items for a family of 4 could perhaps amount to £3,000 per annum, including sometimes eating at restaurants, and there are a few other essential costs. The apartments are built and furnished to a high standard.

THE COMPANY: Our client is a long-established and successful agent in the Gulf area for many major Companies, including Caterpillar and Volvo. As one of the largest organisations with the private sector in Kuwait, they offer secure employment and a most attractive remuneration package. This includes travel facilities which enable children educated in the UK to spend school holidays with their families. Local education is good up to the age of 11.

A highly effective dual-processor, Burroughs 1728 computer installation is operational. This equipment is currently used to handle parts inventory, with on-line data entry facilities, and it is planned to develop new systems in the near future.

The Company wishes to strengthen the Department by recruiting an experienced Operations Manager and to expand the OP Department by recruiting two additional Systems Analysts or Senior Analysts.

OPERATIONS MANAGER

Responsibilities: To manage all operational aspects of the computer installation, including data preparation.

Required Profile: A mature personality and experience as an Operations Manager, ideally within a small Burroughs installation.

SYSTEMS ANALYSTS

Responsibilities: All aspects of the development and implementation of computer systems, which may include some involvement in programming.

Required Profile: 1. A background in programming, including COBOL.
2. Good systems background, including responsibility for the development and implementation of a medium-sized system.

THESE POSTS OFFER THE PROSPECT OF SETTING ASIDE VERY CONSIDERABLE SAVINGS IN WORTHWHILE EMPLOYMENT. THE TIMESCALE OF THE ASSIGNMENT IS SHORT — PLEASE REPLY WITHOUT DELAY!



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Recruitment Consultants

Mayfair £10,000+ on target

We are a professional executive recruitment consultancy with a sound reputation and a proven record of success in several disciplines. We are seeking self-motivated entrepreneurial individuals with the potential to establish firm client bases and handle major advertising and selection campaigns. Thorough training will be given. Additional benefits include company car scheme, bonuses, etc.

Ideally in your mid-twenties to early thirties, you will be client/sales orientated and have achieved a level of success already in the Data Processing field. Experience of recruitment though preferable, is by no means essential. Strength of personality and the ability to negotiate at senior level will be important factors.

For more details contact Barry Latchford, Director on the number below.

Lloyd Chapman Associates

123, New Bond Street, London W1Y 0HR 01-408 1870

UNIVERSITY OF SURREY COMPUTING UNIT

DEPUTY DIRECTOR

(cires £10175)

During the summer this year, the department is installing an integrated system of linked Prime computers — the most advanced and powerful multi-access Prime system in Europe.

A Deputy Director is required for this progressive department and the successful applicant will deputise for the Head of Department for a wide variety of duties both inside and outside the University as appropriate. The Deputy will assist in the running of the Department and will be directly responsible for the management of the User Support Group which provides program development, information and teaching services, development of operating system software and libraries, and advice with user projects particularly in computer-aided learning.

Candidates should have a lively and flexible attitude, proven management ability, wide experience in programming, and good academic and professional qualifications.

A negotiable salary on the Computer and Other Related Staff salary scales around £10175 per annum, plus generous annual leave.

Further particulars may be obtained from the Deputy Secretary (Personnel), University of Surrey, Guildford, Surrey GU2 5XH, or telephone 01483 8121, extension 432. Applications from men and women in the form of a curriculum vitae, including the names and addresses of three referees, should be sent to the same address by July 20, 1979.

£10K + APPOINTMENTS

If you require personnel who command salaries of £10k and over take the opportunity of a regular feature.

For further details contact: Mark Williams on 01-261 8028 or Mark Palmer on 01-261 8174

The Swiss Real Time Mini offers you £14,000-£20,000

Over in Europe's Alpine stronghold, they're rapidly developing what you might call the System 'X' of Switzerland. But they need appropriately qualified people to help them — and not on a temporary basis, either. These are permanent positions, paying peak salaries (what else would you expect up there?) and offering first-class opportunities for the future.

Wanted Immediately are:

A Senior Systems Analyst

Salary: up to c. £19,500. Role: technical rather than managerial. Essential experience: Real Time Mini + telecommunications.

Systems Analysts

Salaries: Up to c. £16,500. 4 years' Real Time Mini experience — telecommunications.

Analyst — Programmers

Salaries: Up to c. £14,500. 2 years' Real Time Mini experience — telecommunications, if possible.

A good degree (or equivalent) is an additional requirement in all cases. If you speak German, that's an advantage. (If you can't, our Client will pay for a one-month crash course.) Process control on flight simulation background would be especially useful, too.

Arrangements for living accommodation, families, holidays and travel expenses are well advanced and on generous terms.

To apply, just pick up the phone and dial Real Time Mini on 01-636 9716 or 8692.

Ask for Beryl McLaren. Any time — day, night or weekend — you'll get a personal answer.

Jupiter Computer Appointments
(Real Time Mini's Place) Rec. Cons.
Suite 41/42
12/13 Henrietta Street
London, WC2



SAUDI ARABIA

Our client, the Ministry of P.T.T., urgently requires for Dual IBM 3031 operating under MVS/ESA 2.

● SYSTEMS PROGRAMMER £27K per annum

Must have a degree or equivalent. Min. 3 years' experience of Computer Systems work, preferably IBM.

Please ring: 01-801 4321; Sheikh/Hesham Overseas Personnel Ltd., 8 Walton Road, London N16 4PP



Move into a new computer world with Halfords

It is unlikely that you will find a better offer in computers this year!

Not only will you have the rare experience of moving in on a new ICL 2950 installation and playing a key role in the design and implementation of a completely new programme: You will also be in a prime position to advance your career and your promotion prospects as our ambitious development plans unfold.

But that's only part of the story.

Our offices are located at Redditch in the heart of the beautiful Worcestershire and Warwickshire countryside. Housing is cheaper than in Southern England and we will give you a generous relocation allowance into the bargain.

Of course, living near Redditch doesn't mean that you're socially out to grass. In fact you will find life offers far more variety in every sphere of interest, and with little or no commuting problems there is more time left to enjoy life to the full!

You will be working for the leading retailer in Europe specialising in the motoring, cycling and leisure markets, with 350 branches in this country.

With such a wide and varied range of Halfords products and activities it's not surprising that our plans through to the 1980's lean heavily on a committed computer programme.

SYSTEMS ANALYSTS (starting up to £7,500)

ANALYSTS/PROGRAMMERS (starting up to £6,750)

The challenge presented by the unique problems encountered within our retailing outlets will tax the ingenuity of the successful applicants and test the capability of our 2950.

That's why we're looking for the most experienced people in the field to join us at Redditch.

The job demands an ability to work with senior executives in a variety of functions.

There are also very good promotion prospects within this rapidly developing and important field.

SENIOR PROGRAMMERS (starting up to £6,450)

PROGRAMMERS (starting up to £5,600)

We need programmers with at least one or two years' experience to implement the systems planned for our new computer installation.

Cobol knowledge would be useful, but not essential. We are prepared to retrain experienced people.

You will find the immediate tasks very rewarding and promotion opportunities outstanding.

If you are interested in any of these vacancies, EITHER write to: Mr. L. T. Richards, Halfords Limited, Icknield Street Drive, Washford West, Redditch, Worcs. B98 0DE.

OR just call in to see us for an informal discussion - no appointment needed - in the hotel most convenient to you.

South Wales

Dragon Hotel, Swansea
Tuesday, 3rd July 5 p.m. to 9 p.m.

Centre Hotel, Cardiff

Wednesday, 4th July 5 p.m. to 8 p.m.

Birmingham/West Midlands

Connaught Hotel, Wolverhampton
Tuesday, 10th July 5 p.m. to 9 p.m.

Holiday Inn Hotel, Birmingham
Wednesday, 11th July 5 p.m. to 9 p.m.

HALFORDS

A BURMAH GROUP COMPANY

Computer Room Manager

£8000 West London

Located in West London is the datacentre of one of Britain's largest Breweries. Twin ICL 2960s support a large communications network.

As a result of reorganisation our clients wish to appoint a Computer Room Manager to be responsible for all aspects of the computer room, including hardware, schedules, standards, performance, recruitment and training of operations staff.

It is likely that you are currently an Operations Supervisor or Shift Leader, in a dual ICL mainframe environment, with experience of GEORGE operating systems. You will be in the age range of 28 to 35 and have the necessary maturity to handle this demanding position.

In return our clients will offer you a salary of £8,000 plus excellent benefits including free BUPA, flexi-time, free company products etc.

For an application form contact REX SCOONES at Capp Associates, Croydon office.

Positions open to male & female applicants, please telephone (24 hour service) for initial discussion or write to address below. QUOTE REF. CW 152-9S

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CROYDON, CR9 2AU

We are an international organization located in the northern Paris region. We will soon be installing an Hewlett-Packard (HP) 3000 Series III Computer System running under MPE III and have plans to make extensive use of HP's data base management subsystem IMAGE. Our Computer Unit has an immediate opening for a:

SENIOR SYSTEMS ANALYST

Applicants - male or female - should have at least five years' experience in Systems Analysis and Design and expertise in the Data Management Techniques. The ideal candidate will meet most of the following criteria:

- Fluency (spoken and written) in English and French;
- Ability to work and communicate with managers at all levels;
- Substantial experience with systems design and analysis;
- Working experience on HP or similar equipment and proven skill in programming;
- Willing to travel abroad;
- Some consultancy experience.

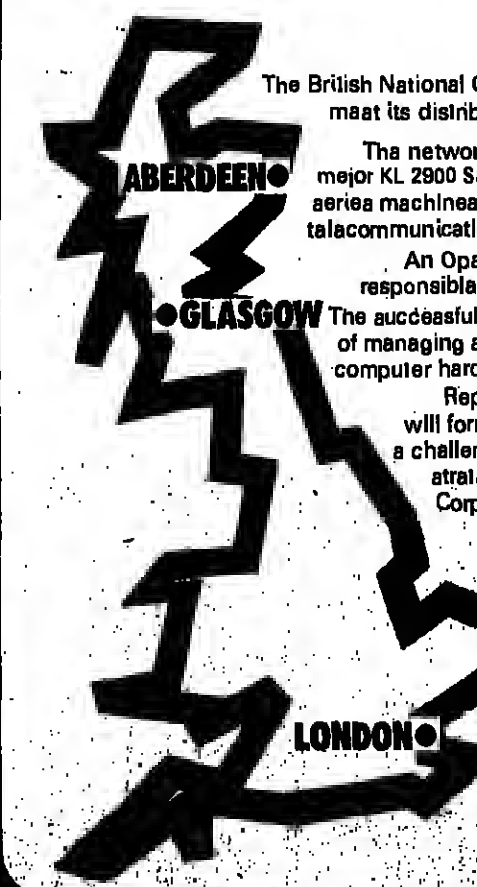
We are just commencing several existing new projects and we are looking for the analytical, technical and personal skills necessary to carry a project through from an embryonic idea to a functional system. The applicants should also be open minded, enthusiastic and enjoy working in a team.

We not only offer job satisfaction from real project involvement but also highly competitive salary and a very pleasant working environment.

Please apply in writing, enclosing C.V. and photograph, and stating salary expectations, to:

FORMES et IDEES
1 bis, rue de Paradis, 75010 Paris

Computer Operations Manager



The British National Oil Corporation is developing a network of mainframe and mini computers to meet its distributed data processing requirements throughout the UK for the 1980's.

The network is centred on a major KL 2900 Series Computer to run under a VME/8 operating system. Hewlett Packard 3000 series machines located in Aberdeen and Glasgow will link to the mainframe through a telecommunications network which will also support terminals in the London office.

An Operations Manager is required to be responsible for the management of computer operations throughout the Corporation. The successful applicant will be educated to degree level and have at least 3 years experience of managing a major computer installation. A knowledge of the latest technology in computer hardware, operating systems and telecommunications networks is essential.

Reporting to the Computer Manager you will form part of a young and enthusiastic team. You will have a challenging and rewarding role in the implementation of BNOC's hardware strategy and the management of a substantial investment which is central to the Corporation's development plan for the 1980's.

You will be rewarded by a highly attractive remuneration package offering a competitive salary level, excellent pension scheme and relocation assistance where appropriate.

If you would like to take advantage of this Glasgow based opportunity please telephone or write to:-



The Recruitment Officer,
The British National Oil Corporation,
150 St. Vincent Street,
GLASGOW, G2 6LJ.
Telephone Number 041-204 2525

The British National Oil Corporation

AMERICA

MINNEAPOLIS

Our client, a major record manufacturer and distributor based in Minneapolis, Minnesota, requires analysts and analyst programmers to implement a new product movement system. The configuration is IBM 370/158, running OSVS COBOL with some IMS involvement. All candidates should have strong IBM OS COBOL backgrounds and product movement experience would be ideal though not essential.

The working environment is excellent and you would be joining an established team of our staff who have been on site for six months. This is a marvellous opportunity to become part of a young go-ahead team working in a relaxed and informal atmosphere. The assignment is for 12 months and total income, depending on experience, will range from \$2300 to \$2800; in addition the overseas assignment carries significant tax advantages.

Interviews are scheduled during week commencing July 9th in London. Please ring Jean Starkey on 01-836 8411 immediately.

CHICAGO

Our new Chicago affiliate has immediate openings for 6-12 months' assignments in this beautiful city on Lake Michigan. We can currently offer the following opportunities:

IBM 370 OS COBOL IMS order entry programmers.

Our client is a well-known and highly respected firm of international management consultants.

IBM 370/158 OS TSO Assembler Analyst programmers to work in a large insurance company.

IBM 370 DOS to OS conversion COBOL Analyst Programmers with conversion experience.

Our client is an international motor manufacturer.

PDP 1134 RSX 11.
IBM 370 OS VM/CMS.
IBM 370 OS CICS DL1.

All systems programmers in any of the above categories for a State Bank.

In addition we still have many general requirements throughout the United States for good OS COBOL Analyst/Programmers. If you wish to be considered for future assignments in America ring Jean Starkey or Cathy Walsh.

Computer People Contracts

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VLI House 68-69 St. Martins Lane
London WC2N 4JS

tel: 01-836 8411

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BURROUGHS COBOL PROGRAMMERS

City c£6,5000 + 3% Mortgage
A merchant bank operating a large Burroughs installation including a mainframe and several minis is seeking several COBOL programmers with good experience to develop into analysis work. You will be of interest if you have eighteen months' or more COBOL experience and are self motivated without the need for close supervision. The company offer an excellent salary together with very good fringe benefits including a superb staff restaurant, L.V.'s, Christmas bonus, etc.
Reference BP 26/1

RPG 11 PROGRAMMERS

City to £6000 + 3% Mortgage
A large international bank urgently requires two capable RPG 11 Programmers to work on a whole range of financial applications on their IBM SYSTEM 34. All you will need is around 12 MONTHS' RPG 11 experience, on any machine. The appointments will offer good career opportunities and future exposure to Systems Analysis, as well as Non-Contributory pension, Season Ticket loans, etc.
01-439 7871 Reference BP 26/2

IBM ASSEMBLER/ COBOL PROGRAMMERS

Central London to £7500
A large company in the leisure industry which operates a dual IBM installation is currently recruiting programming staff to work on exciting new real-time developments on new hardware. The people they are seeking should have upwards of one year COBOL or ASSEMBLER. In return the company offer substantial salaries, plus generous fringe benefits one normally associates with the leisure industry.
Reference BP 26/7

SYSTEMS ANALYST

City to c£7500
A large shipping and insurance group is seeking a Systems Analyst to join their small and friendly team, which operates an expanding ICL installation, with a new machine arriving shortly. The person they are seeking should have approximately three years' analysis experience and possibly a programming background. The company offers excellent starting salaries together with extremely good fringe benefits including L.V.'s, season ticket loans, BUPA etc.
01-439 7871 Reference BP 26/6

IBM + ICL OPS

IBM 370 DOS VS £5400
Shift Leader required by N. London installation. Excellent perks include mortgage subsidy.
IBM 360 DOS VS £4500
Minimum of 12 mths DOS Exp for 2 shift working C. London installations.
IBM 370 DOS VS £4500
8 mths + experience required by a variety of installations in C. London and the home counties.
IBM 370 OS VS1 £4800
City Bank requires an Operator with 8 mths + Experience. Excellent perks and fast promotion for the right applicant.
IBM SYS 3 £4800
Operator required by N. London installation. Experience of SYS 3/15 preferred.
ICL 2900 £5000
Shift Leader required by small 2 shift working installation. 2 years + 1900 or 2900 experience necessary. Perks include Annual Bonus.
ICL 2980 £4000
1 years experience preferably on ICL equipment for this large City based installation.
ICL 2980 £4500
City based installation with newly installed 2980 requires an Operator with 1 year + 1800 or 2900 experience.
ICL 2900/1900 £4800
Large C. London site requires Operators with 12 mths + experience on any ICL equipment.

BASIC + /BASIC + 2

Central London/Home Counties to £8000
We have been retained by various companies in the MINI and MICRO fields who are currently seeking Programmers at various levels with a minimum of 12 months BASIC+/BASIC+2 experience. The applications range from purely commercial through to technical and scientific. The salaries are very good and most companies offer a various package of fringe benefits which could include CHEAP MORTGAGES, SEASON TICKET LOANS etc.
Reference HK 26/3

TECHNICAL CONSULTANT

C. London to c£10,000
For people interested in the Software House environment there are currently vacancies in the Real Time and Communications fields within one of the best companies in London. You should have 3 years experience in either message switching applications, sales support, PDP 11's, turnkey systems or data communications and wish to progress into a Technical Sales/Sales Support Role. The company offers an excellent salary plus a full pension scheme, interest free season ticket loans, L.V.'s, staff purchase facilities and a house purchase scheme.
01-439 7871 Reference HK 26/4

CONTRACTS

PROGRAMMERS & ANALYSTS

BASIC+2	RSTS/E	CITY
RPG II	CCP	CITY
CORAL 66	RSXII	S. COAST
2960	TPS	CITY
BASIC+	RSTS/E	NORTHANTS
BASIC+	RSTS/E	N.W.LONDON

DUE TO OUR CONTINUALLY CHANGING REQUIREMENTS WE ARE ALWAYS INTERESTED IN HEARING FROM COMPUTER PROFESSIONALS WITH A SOLID D.P. BACKGROUND TO WORK WITH MAJOR CLIENTS IN THE U.K. AND EUROPE.

CALL

BOB EDWARDS

TELEX 25851 01.439.1856

MINI ASSEMBLER PROGRAMMERS

West London to £7500
A small but rapidly expanding Software House based in London are currently seeking Assembler Programmers with a commercial background to work in a Customer Support role. If you have 3 years' Assembler experience on either MINI's or Mainframes and would welcome involvement on a client basis then this opening would be of interest. The company offers a good salary plus paid overtime and the chance to move into Analysis.
Reference HK 26/5

ANALYST/PROGRAMMERS

West End to c£7000
An International Pharmaceutical company based in the West End with a range of MINI's and Mainframes in key locations throughout the U.K. are seeking Analyst/Programmers with a minimum of 1 year's Analysis. A knowledge of CORAL 66 would be ideal but retraining will be provided to applicants with good programming and analysis experience. They offer a competitive salary plus all the fringe benefits you would expect from a company of their size and standing.
01-439 7871 Reference HK 26/6

RECRUITMENT CONSULTANT

West End £8500 to £9000 +

We are looking for people with several distinct qualities to join our team of consultants; people with the desire to make money, with a flair for assessing and communicating with others, and with the drive to succeed by sheer hard work.

In return for these qualities Datascene will offer an ideal opportunity to use current DP knowledge in a varied and fulfilling role, working with both clients and our own consultants on all aspects of recruitment.

If you have experience within either Systems & Programming, or Operations, and would like more information, please call immediately.

01-439 7871 Reference BP 26/9

OTHER OPS

DATA 100 £7000
International Company based in Basingstoke requires a Senior Op. Data 100 Exp preferred, OS JCL knowledge essential.
H.P. 3000 £4500
Experienced Operator, on any machine, required to take control of Computer room for Oxford installation. Chance to learn Programming.
CMC REALITY £NEG
Any Mini or Mainframe experience for C. London Site. The right Applicant will be trained in Systems Programming and be expected to take control of the Computer Operation, when able.
BURROUGHS B6700 £5600
2-3 years Burroughs experience for this Senior Operations position. Junior Ops also required with 1 yr + Exp.
HONEYWELL 66 GCOS £4800
Large installation requires Operators with 1 yr + exp preferably Honeywell, but will look at other mainframes.
NCR B4 £5500
Various levels of Operators required by busy site shortly. Installing a powerful criterion.
NCR B1 to £4500
8 mths + NCR experience preferred for this day shift only site salary according to age and experience.
UNIVAC £4000
South London installation requires an Operator with 2 mths + experience, preferably on Univac Hardware.

Datascene Recruitment Ltd.
Sceptre House
169-173 Regent Street
London W1R 7FB

01-439 7871

datascene



Datascene International Ltd. Telex: 25851
Sceptre House
169-173 Regent Street
London W1R 7FB

01-439 1856

JBA

Software Specialists

Home Counties Up to £9,000 plus bonus

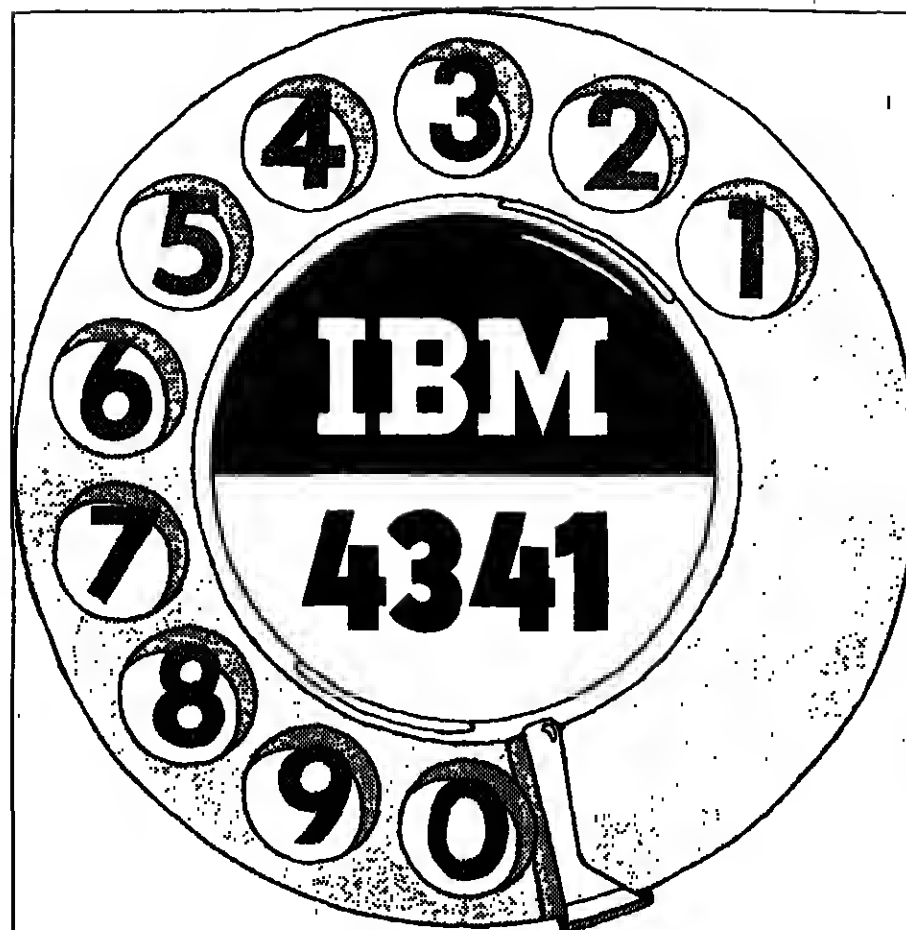
Our client, a major software house with an impressive growth record, is continuing to expand their project teams and currently has vacancies for Programmers and Designers to work on the development of software applications associated with established operating systems.

Applicants should have at least three years experience working on software such as OS/DOS, VME-B/K, Communications or Networks in a sophisticated environment. A background of implementing large main frame systems, perhaps with a computer manufacturer, would be an advantage.

Excellent salaries and the opportunity to work in a professional organisation.

If you would like to discuss these vacancies please contact JIM BAKER,

JAMES BAKER ASSOCIATES
International Personnel Consultants
16 Maddox Street, London W1
Tel: 01-491 4478



Speak to us if you're interested

We'll be among the first companies to receive installation of the new IBM 4341 computer next year. In the meantime, there's a lot of development work to be done and we want to hear from professionals who are interested in working in a go-ahead environment of the forefront of computer technology. Our immediate requirements are for:

Systems Analyst
Systems Programmer
Senior Programmer
Programmer
Computer Operator

You'll be working in prestige offices in the centre of the Whifflet Centre in Croydon on the development of major on-line systems using CICS/VS and DLI which are

currently running on our IBM 370/138. For the programming vacancies COBOL experience is essential.

We offer an attractive salary plus excellent fringe benefits including a non-contributory pension, half-yearly bonus, luncheon vouchers, etc. And we're located in the heart of a shopping and entertainment centre with many other facilities close by. All you have to do to find out more is telephone Colin Honour, Manager-Dolo Processing Development, on

01-686 5678

Reverse the charges if you like. If you can't speak to him during office hours, you can reach him at home on 01-777 2349. Northern Star Insurance Co. Ltd., Rothschild House, Whifflet Centre, Croydon CR9 1NP.



Northern Star

UNIVERSITY
OF SURREY
COMPUTING UNIT
**SYSTEMS
PROGRAMMER**

During the summer this year the Department is installing an integrated system of linked Prime computers — the most advanced and powerful multi-processor Prime system in Europe. Applications are invited for the post of Systems Programmer within the Computing Unit and the successful candidate will be expected to work on the development of software for the new system. The salary will be on the Computer and Other Related Staff Scale up to £7,145 (£7,521 from 1 October, 1979), plus generous annual leave. Further particulars can be obtained from the Deputy Secretary (Personnel), University of Surrey, Guildford, Surrey GU2 5XH, telephone Guildford 71281, extension 452. Applications from men and women in the line of a curriculum vitae, including the names and addresses of two referees, should be sent to the same address by 13 July, 1979.

£4000 - £7000+
North+Midlands
Analysts & Programmers
051-832-4184
(London office)
Sampson Staff

The J. & J. Dyson Limited Group of Companies, one of Europe's leading Manufacturers of Refractory Products wish to appoint a

Systems Analyst

To join a small but highly successful department, which has recently graduated from an ICL 2803 to a 2804 Computer and is currently installing a network of remote terminals. The successful candidate will be fully experienced in the use of ICL equipment and will possess a knowledge of COBOL and RPO. He/she will be capable of dealing with all levels of user management and will be expected to use their own initiative to assist in further development of Computer Systems. Situated near Midland Station, hours Monday to Friday, 9 a.m. to 5 p.m. Good salary, 30 days' holidays, pension scheme, luncheon vouchers.

Please telephone for an application form to:
Mr. David Bartlett
DYSON GROUP
COMPUTER CENTRE
Phone Sheffield 25171

Dyson Group
Computer Centre



Central Computing Consultants

1st Floor Grosvenor Place, London SW1W 0EN Telephone 01-8347065 Telex 27050 RCL 1035
Camden House, 211 Lower Grosvenor Street, Dublin 2 Telephone 789577

MINI & MICRO SOFTWARE SPECIALISTS

Software specialists of all levels are required by a leading International Software House to help it expand its software capabilities.

Applicants must have experience of one of the following machines: Intel, T.I. or Zilog — or should be mini computer people wishing to take advantage of our client's exceptional opportunities in micro-processing.

Opportunities also exist for ANALYST/PROGRAMMERS with at least 2 years' experience of real-time applications on mini-computers to work on a variety of projects, including Defence, Business Systems and Air Traffic Control.

CW 26/1

SALES

Dublin K.E. £20,000
A small but rapidly expanding Dublin based company marketing highly sophisticated Micro and Mini based business systems is seeking additional high calibre Sales Executives to develop and increase its customer base throughout Southern Ireland.

The ideal candidate will be able to demonstrate a proven track record in either Mini, Micro or VRC Sales and will possess the drive and ambition necessary to succeed in a highly competitive and fast growing market place.

The company offers attractive basic salaries and, where applicable a relocation allowance. A company car is provided and, with commission free, earnings in excess of £20K are achievable.

For further information on this exciting opportunity telephone Jim Corrigan on Dublin (0001) 789577 or write to C.C.C., at Cranmore, 65 Glen Road, Belfast BT11 8BD.

CW 26/3

PROGRAMMER ANALYST

WEST OF IRELAND c£6000 + relocation expenses

A light manufacturing company require a Programmer Analyst to join their IBM systems 3 installation in the West of Ireland. The successful candidate will play an active role in the development and implementation of a Bill of Material and Inventory Systems.

Ideally, applicants will have a minimum of 18 months' experience of RPG 11 programming, in addition, exposure to systems programming and/or systems analysis would be advantageous. Our clients offer an interesting and rewarding position to the selected candidate who will join them at the development stages of the above and other new projects. The company is located in a very pleasant rural environment and offers a competitive salary coupled with generous relocation expenses and attractive fringe benefits.

For further information telephone Jim Corrigan on Dublin (0001) 789577 or write to CCC at Cranmore, 65 Glen Road, Belfast BT11 8BD.

CW 26/5

COMMUNICATIONS

United Kingdom and Europe — £8000-£10,000 p.a. to £16,000 p.a.

Have you a good knowledge of multi-computer linked systems with understanding of interface software, protocols and network architecture? If you do then our client, an International Software House would be interested in talking to you about their vacancies in the United Kingdom and abroad for experienced Communications professionals.

All we ask is that your experience has been gained on IBM, ICL, Honeywell or Univac hardware, and that your software knowledge includes an understanding operating system interface, drivers and emulators.

If you wish for further information please ring the advising consultant.

CW 26/7

MAINFRAME COBOL

London £7,000 + bonus

Experience of COBOL is the more immediate requirement needed by our client, an international software house, today.

Fortunately, our client being one of the oldest and most respected companies in the industry can and do offer a lot more than the majority of their competitors. These benefits range from genuine career progression to project responsibility, salaries + bonuses are related to one's contribution to the company, and there is the prospect of interesting assignments in the U.K. and overseas.

As mentioned above, we seek candidates with COBOL experience, but due to the overall business base being spread over all the traditional mainframes our client can end will offer interesting and well-paid (up to £7,000 + bonus p.a.) job opportunities to programmers with 2 years or more COBOL on any machine.

CW 26/2

SYSTEMS ANALYSTS

North Middlesex Up to £7000 p.a.

A Data Processing Department is the backbone of any successful company, especially if the company is a Multi-Million Pound Manufacturing organisation with a turnover in excess of £1,000 million.

To keep up with the continual demand from users, the installation is shortly to upgrade their dual 1900's, to cope with their planned expansion of systems.

This is why we would like to hear from Analysts with the following qualifications and experience:

- * Degree or equivalent
- * Programming background (COBOL)
- * On-line experience
- * Production controls, although not essential would be an added advantage

Analysts/Programmers who wish to become full Analysts, will also be considered.

CW 26/4

MINI COMPUTER CONSULTANTS

London To £12,000

One of Britain's largest suppliers of DEC PDP-11 based turnkey systems is currently seeking to strengthen its team of technical consultants.

One of their current projects requires them to recruit a consultant who has experience of the selection and sizing of mini-computers, evaluation of mini software and experience of dealing directly with manufacturers and salesmen. Candidates should have at least 6 years' data processing experience, and should be able to display good communications skills and a strong personality.

Technical consultants at other levels are also required, ideally with MUMPS experience, although exceptional candidates will be given training where necessary. Once again good communication is important, as well as an ability to appreciate user requirements.

CW 26/6

NCR OPPORTUNITIES

Central London To £7000 + Car Scheme

A rapidly expanding computer company involved in the Automotive and Finance industries has a need for PROGRAMMERS and ANALYSTS in their London office.

The installation is a Criterion 8670 operating under B3 and includes an interactive on-line communications system using audio response techniques, which supports approximately 1,000 terminals nationally. Current developments include the introduction of Minis and consistent with this a Data General Eclipse will be installed shortly.

We would like to hear from people with the following skills and experience:

- * NEAT/3 and LEVEL 2
- * TELEPROCESSING NEAT
- * DATA GENERAL COBOL (RPO)
- * N.C.R. COBOL
- * ON-LINE SYSTEM DESIGN
- * AUDIO RESPONSE TECHNIQUES

Current expansion plans will ensure the successful candidates will be able to gain responsibility with the growth of the company coupled with an excellent career path.

**Tesco the new leaders
are coming to town**

CUMBERLAND HOTEL
Marble Arch London W1
Wednesday July 4th 9am-8pm

THE TOWER HOTEL
London E1
Friday July 6th
7am-8pm

May Fair Hotel
Berkeley Street London W1
Thursday July 5th 9am-8pm

We're looking for programmers and analysts at all levels, as well as more senior staff, to work at our Head Office in Chesham, Hertfordshire.

You'll have to prove you've got the skills before we let you loose on our \$6 million IBM complex, but if you're confident you can, we'd like to talk to you.

We're starting in London this Wednesday, July 4th, at the Cumberland Hotel, Marble Arch and the May Fair Hotel, Berkeley Street, on Thursday, July 5th from 9am to 8pm. On Friday, July 6th, we're at the Tower Hotel, E1, from 7am to 8pm, so why not call in for breakfast between 7-10am?

Then we're off round the country. Watch your local press to see when we'll be calling at your town, and call in for a drink and a chat, and to discuss the exciting prospect of your career opportunities with the new leaders. For advance information of our timetable, contact Mrs Shirley Phillips, Personnel Manager, Tesco Stores Ltd, Delamare Road, Chesham, Herts. EN8 9SL. Tel: Watlington 32222.

TESCO
the new leaders...

ata Computer Recruitment

A division of ATA Selection and Management Services,
recruitment consultants to industry and commerce since 1962.

STEP INTO MANAGEMENT COMPUTER MANAGER WILTSHIRE to £7,500 + BUPA

Our clients, one of the top three companies within their field require a Data Processing Manager to consolidate and develop the present department. Reporting directly to the Financial Director, he/she will be responsible for: Hardware and Systems enhancement; Advising Users and Determining priorities; Machine Scheduling; Ensuring the co-operation of Users to enable schedules to be adhered to; The development of the Department as a whole. The company have recently installed a BB00 to supercede their Philips computer and the initial task will be the acceptance of the bespoke software packages which are at present being produced by a Software House. The next priority will be to ensure the smooth transfer of Data from the Philips kit to the Burroughs which it is hoped will be complete by the end of the year. It is envisaged that the successful candidate will be a Systems Analyst or Analyst Programmer with a broad experience of commercial systems, but more importantly, be innovative in approach and ideas. This is primarily because of the nature of our client's business and the non-routine approach to standard systems. This is a challenging and initially a demanding position which should offer immense satisfaction to any computer professional. RELOCATION ASSISTANCE is available and the house prices in the surrounding rural areas are considerably less than comparable property in the Home Counties and most other areas of Britain.

For further information telephone Ian Baker on 0272 211035 or your nearest ATA office.

Alternatively write enclosing detailed résumé to:
ATA COMPUTER RECRUITMENT
Equity & Law Buildings
36/38 Baldwin Street, Bristol BS1 1NR

LONDON (01) 637 0781 MANCHESTER (061) 832 5856 BIRMINGHAM (021) 643 1994
BRISTOL (0272) 211035 EDINBURGH (031) 226 5381 CRAWLEY (0293) 514071
BISHOP'S STORTFORD (0279) 506331 SOUTHAMPTON (0703) 37555

KNIGHT PROGRAMMING SUPPORT LIMITED

MANCHESTER

143/4 ROYAL EXCHANGE BUILDINGS

RPG2 PROGRAMMER

required for our Northern client. Commercial applications.

c. £220

IBM 370/OS/VS1 COBOL

Programmers required for various projects-type work in the Midlands.

c. £220

2900's VMEB DESIGNER

required for North Eastern location.

c. £NEG.

IBM 370/OS/ASSEMBLER

Programmers with TSO experience for North-west client. Financial applications.

c. £230

PL1/CICS/DLI

Senior Programmer required for our North-west client. Business systems experience necessary.

c. £NEG.

UNIVAC 1108

Cobol or Assembler experienced Programmers for our North-western client. General commercial and financial applications.

c. £220+

IBM 370/DOS/VS COBOL

Programmers required by our Midlands client. Commercial applications.

c. £220+

PDPII RSXII RTL2 BASIC

Systems Programmer for Midlands location.

c. £NEG

2903/4 COBOL PROGRAMMERS

North-eastern location.

c. £NEG

MARK IV PROGRAMMERS

North-west location

c. £220

CICS/PL1/DOS/VS

Programmers for our Midlands client.

c. £230

1900/PLAN/COBOL

Programmers for North-east - varying applications.

c. £220

PDPII CORAL 66 RSXII

Programmer with design experience for long-term contract in the North. Process control experience vital.

c. £NEG

IMS/COBOL

Programmers required for 6-month contracts in the Midlands.

c. £230

CICS/COBOL

Programmers for the Midlands.

c. £230

For details of these and other contracts please contact Judy Lee/
Lynn Barton on 061-833 9341/5 (24 hours)

CURRENT VACANCIES INCLUDE:

PROGRAMMERS

NORTH

to £5712

Programmers with COBOL experience are required to work on large 2900's. Productivity payment/relocation expenses. Ref. 1071.

ANALYST PROGRAMMER

LANCS

Our client requires Analyst Programmers ideally with IBM/COBOL experience to work in an expanding installation. Excellent career prospects. Ref. 1065.

ANALYST PROGRAMMERS

WEST YORKS

c. £5400

Our client require a working knowledge of design and analysis or a desire to get into systems. COBOL experience required. Ref. 1113.

SYSTEMS ANALYSTS

NORTH

c. £6200

Productivity payment and relocation expenses offered. Our client requires Analysts to work on large ICL 2900s. Ref. 1073.

SYSTEMS & PROGRAMMING MANAGER

MIDLANDS

c. £7000

Our client is in need of a Systems and Programming Manager to work in their ICL installation. Commercial environment/relocation expenses. Ref. 1169.

PROGRAMMERS

IRELAND

c. £8500

Our client requires Programmers with PDP BASIC or DIBOL experiences to work in installations in Southern Ireland. Relocation expenses. Ref. 1158.

PROGRAMMERS

NORTH WEST

c. £5300

Subsidised mortgage scheme offer; COBOL or ASSEMBLER Programmers required to work on advanced IBM equipment. Ref. 1139.

ANALYST PROGRAMMERS

THE NORTH

£5600

Analyst Programmer with ICL COBOL experience and driving licences are required to service a group of companies in the North. Ref. 1156.

SYSTEMS ENGINEERS

CLEVELAND

to £7650

Our client requires Systems Engineers with experience in process control. DEC knowledge an advantage. Ref. 1181.

SYSTEMS ANALYSTS

LANCS

to £7000

Our client, a leading expanding installation, requires Analysts to work on IBM equipment. Relocation expenses offered. Ref. 1168.

ANALYST PROGRAMMERS

THE NORTH

to £5600

Analyst Programmers or Programmers with an interest in systems required. ICL PLAN experience ideal. Ref. 1188.

COBOL PROGRAMMERS

NORTH WEST

c. £6000

Our client requires experienced COBOL Programmers to work in a new installation; financial applications. House purchase scheme/relocation expenses. Ref. 1023.

For details of these and other vacancies please contact Joan Johnstone
on 061-833 9341 (24 hours)

Area Sales Manager

(MINIS)

INCOME PACKAGE TO £15,000 p.a.

(5 figure base salary) Car, etc.

Benefits etc.

**MIDLANDS
BASED**

We have been retained to identify a true sales professional, who feels that promotion to a Management appointment would be a timely and justified career progression. The successful applicant will lead a Midlands and Northern sales and support operation which will require you to have the qualities to maintain and expand an existing client base and be able to demonstrate sales leadership capabilities.

Our Client, a well-respected and reputable U.S. Mini-computer Manufacturer, market a superb range of products and is acknowledged as being a market leader in the process control, measurement and distributed processing network area. A progressive and challenging four year plan has been anticipated which will be achieved by the dedication of a highly professional Management team who continue to carry out those Organisational Improvements necessary to maintain and develop their leadership in the market place.

You should have:-

- * direct sales experience with preferably an industrial based mini computer supplier or software house
- * a technical understanding of the process measurement and communications markets for mini computer products
- * the capability to direct and substantially develop a sales operation

If you are currently employed in sales or sales support activities and feel that you have the necessary attributes to contribute to a small but highly committed team of professionals telephone, without delay, RICHARD CHAMPION on 021-236 3781 (24 hour answering service) or Hagley 884166 (evenings and weekends). All replies will be treated in the strictest confidence.

London 01-935 0871 3 Mandeville Place, Wigmore Street, London W1M 5LB
Birmingham 021-236 3781 35-37 Great Charles Street, Queensway, Birmingham B3 3JY
Manchester 061-833 0427 Blackfriars House, The Personage, Manchester M3 2JA

Your Micro/Macro Experience and the World of Process Control HERTFORDSHIRE



The last decade has seen vast technological change in all areas of industry — and we believe that we have contributed more than our fair share of expertise to improving efficiency by supplying highly sophisticated process control facilities to various industries ranging from major International Chemical, Petroleum, Pharmaceutical and Steel Companies to public utilities such as Water Authorities.

Amongst the leaders in our field, we specialise in the application of computers to industrial process control and automation providing up to the minute information to aid management decisions, a more uniform product and increased product efficiency.

Our products, based on DEC PDP 8 and PDP 11 hardware, are installed in over 120 locations throughout Western Europe, America and Australasia and a rapidly expanding market place has now created the need to recruit further Technicians.

Vacancies exist within our Systems Department and Design and Development Department where we are seeking applications from technically biased individuals.

DESIGN & DEVELOPMENT DEPARTMENT

Here, you will be involved in producing the standard software components for the company's process control computer systems. The activity within this department is equivalent to that with a computer manufacturer and vacancies are for:

CONSULTANTS - to £9,500
SENIOR SOFTWARE DESIGNERS - to £8,500
SOFTWARE DESIGNERS - to £7,500

Since we are engaged in the development of our own hardware and software, we are prepared to consider applicants from a variety of backgrounds including computer manufacturers, software houses, automation companies, large automation users, mini/midi OEM's. Applications experience could have been gained in process control, message switching, military control, data acquisition, road, rail, air traffic control or indeed any industry requiring time critical applications. Your software knowledge could be with BASIC, ASSEMBLER or CORAL or equivalent languages.

Our vacancies are for all levels of staff, so whatever your real-time mini involvement has been, we would be very interested in meeting you.

FOR A COMPLETELY CONFIDENTIAL DISCUSSION REGARDING A VERY INTERESTING FUTURE, CONTACT OUR ADVISING CONSULTANT, ANDREW CARTER ON 021-236 3781 (24 hour answering service) OR evenings and weekends Lapworth (05643) 3272.

INTERVIEWS WILL BE CONDUCTED IN EITHER LONDON, BIRMINGHAM OR MANCHESTER AT YOUR CONVENIENCE AND AT OUR EXPENSE.

SYSTEMS DEPARTMENT

On receipt of an order, the Systems Department is responsible for creating a systems specification with the customer through to the integration of the system with the customer's process on site. Again, vacancies exist at various levels but immediate priorities are for:

PRINCIPAL ANALYST/PROGRAMMERS - to £8,000
SENIOR ANALYST/PROGRAMMERS - to £7,000
ANALYST/PROGRAMMERS - to £6,000



Specialist Computer Recruitment Ltd

London 01-835 0871 3 Mandeville Place, Wignmore Street, London W1M 5LB Birmingham 021-236 3781 36-37 Great Charles Street, Queensway, Birmingham B3 3JY Manchester 061-833 0427 Blackfriars House, The Pavement

MYRIAD OPERATIONS

Computer Personnel Consultants

CONTRACT PDP 11 - MACRO-11

BERKS./SURREY

£ NEGOTIABLE

Two Contract Personnel are urgently required to undertake an extremely interesting project developing systems and applications software for an intelligent terminal system. Using DEC LSI-11 under RT-11 the persons required should offer at least one year's experience of MACRO-11.

For further information please telephone immediately quoting reference: E1/2806.

24-hour answering service
Please telephone for a confidential
discussion or write
30 Fleet Street London EC4A 3AA
01-353 0981

SPAR

Administration Manager

We are a major food distribution company in the Linford Group supplying SPAR retail stores in London and South East England.

We require an Administration Manager (male or female) at our St. Mary Cray depot, with responsibility for 12 staff and the function of sales invoicing, invoice passing and cost control.

The successful candidate will need to have suitable experience which will include computer terminal input and basic computer appreciation. A knowledge of ICL system 10 would be a distinct advantage.

A five day week and normal large company benefits are offered together with an attractive salary and company car.

To apply please telephone: Orpington 31511 Ext. 5 for an application form.

Thomas Linnell & Sons Ltd.,
Central House, Leesons Hill,
Orpington, Kent.

LIVERPOOL

Programmer to move into management

Joseph Parr Ltd. are based in Bootle and have a Data General Nova Computer System with on-line links to remote sites. A new micro-computer based business system is to be installed next month.

The company require an experienced basic Programmer to work on the development of their computer systems. Applications are invited from experienced programmers with the ability to take on responsibility for units of the data processing systems and the supervision of their data input/output staff.

Contact: Mr. N. T. Chatham, Finance Director, Joseph Parr Limited, 372 Stanley Road, Bootle, L20 3AD. Telephone: 051-822 4181.

GEMINI Recruitment

1979 Graduates for Management Consultancy

London Based **£4200 initially** International Travel

The Management Consultancy wing of a worldwide Chartered Accountancy firm are seeking several graduates in Computer Science or similar to join their Systems Development Group this summer.

You will be trained and gain experience in all aspects of programming and design within a group dealing with computer and systems selection and evaluation, design and implementation of technically complex projects and DP efficiency reviews.

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Contact Barry Latchford quoting ref. BL 2441 for more details.

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The North Staffordshire Health District Computer Centre at Stoke-on-Trent is leading the field in the innovation and development of services and systems for the Health Service.

The work is in the advanced multi-processor real-time environment and we are at present reorganising and developing the department structure to offer a greater range of services. We are shortly to install an ICL 2960 operating a VMS/B TP System using a comprehensive IDMS Data Base.

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Software
Data Management
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Our North Staffordshire base gives access to some of Britain's finest country. The Peaks, Cannock Chase, Inland Waterways, Mid and North Wales within easy driving. Manchester or Birmingham less than an hour away on the M6. The housing is cheaper here as well, but don't take our word for it — come and see for yourself.

Enquiries to the Director of Computing Services, North Staffordshire Hospitals, Princea Road, Hartshill, Stoke-on-Trent ST4 7LN.
Telephone: Stoke-on-Trent 49144. Extension 4540 or 4589

Job descriptions and application form available from the Area Personnel Officer, 52 Marston Road, Stafford ST16 3BU. Telephone: Stafford 58231. Extension 28.

Closing date for receipt of completed applications 12th July, 1979.

**NORTH STAFFORDSHIRE
HEALTH DISTRICT**

Staffordshire Area Health Authority

Analyst/Programmers
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An opportunity for your experience to pay off in a big way

Data General, one of the fastest growing computer manufacturers in the world, is looking for experienced Computer Service Engineers to join a newly established repair centre team based in Northolt, Middx. These are ground floor opportunities for engineers with the right experience to share in the growth and success of this new operation.

As a vital part of the European Support Group, you will be given the necessary training to repair to component level on our extensive range of Nova and Eclipse CPU's and peripherals. For the successful engineer, progress into a field support role is envisioned at a later date.

If you are an experienced engineer looking for a satisfying job, giving excellent career prospects, and a competitive salary, then contact Clive Wright at the address below, or telephone Bob Jenson on 01-841 5151 between 8.00 a.m. and 6.00 p.m. for more details.

Data General

Data General Limited, 3rd & 4th Floor, Houslow House, 724/734 London Road, Hounslow, Middlesex TW3 1PD. Tel: 01-572 7455.

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Due to an expanding volume of work, our clients, a major bureau installation, have asked us to assist them to recruit Systems Analysts at several levels, ranging from Junior Analysts (say with two or three years in DP, including some analysts), to Senior Analysts, with appropriately heavier experience and team leadership capability. There are no specific applications or hardware requirements; the need is for presentable, well-educated DP professionals.

To learn more about these first-class career openings, ring us in confidence, quoting ref. 672CW or leave a message on our answering machine and we'll contact you.

EDP SYSTEMS LTD
52-53 Margaret Street, London W1N 7FF
Telephone 01.637 5796 (24 hours)

SYSTEMS PROGRAMMERS COBOL PROGRAMMERS

Glasgow

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- ★ NEW BURROUGHS B 6800 INSTALLATION
- ★ ON-LINE SYSTEMS
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We are installing a 2Mb B 6800 with over 1000 megarbytes of disc and a large data communications network, linking remote VDU's and printers, located at our operating companies throughout Scotland.

An exciting additional project has created further opportunities for Programmers and Systems Programmers (men or women) to join our existing teams of contract staff. These posts are offered on a renewable contract basis and could last for up to 24 months.

Our requirements are that applicants should:

- ★ Be able to demonstrate substantial experience and skill in programming.
- ★ Have worked on large systems running data communications networks. This experience should, preferably, have been gained on Burroughs equipment, but applicants with relevant experience on other systems will be welcomed.
- ★ Be able to fit into a development environment where initiative, self-discipline, enthusiasm and flexibility are the valued attributes.

In return, we offer:

- ★ Good fee rates with frequent merit reviews.
- ★ A challenging technical environment.
- ★ The opportunity to develop personal skills in new aspects of data processing.

Our main Project Office is in central Edinburgh, but we also have offices in Glasgow and Cumbernauld. Some mobility within Scotland will be required.

To apply, ring Phil Jones or Allen Fraser on 031-556 2515, or write with a c.v. to:

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SENIOR PROGRAMMERS

Riyadh, Saudi Arabia

The Civil Service Bureau of the Government of Saudi Arabia has developed a computerised Personnel and Payroll Data Base System, to handle reports on salary administration, personnel motivations, education planning, placement selection and manpower development.

Successful applicants are expected to participate in implementing the System, as well as develop further Sub-Systems, using IBM 3201/68 OS/VS, IMS.

Requirements: a minimum of:

- College degree in computing.
- Seven years' COBOL programming experience, with the last three years in Data Base applications.
- Attractive salary depending upon qualification.
- 45 days' annual leave.
- Air travel for self and family.
- Housing and Transportation allowances.

Correspond to (no later than Aug. 15, '79):

Director
Data Processing Dept.
Civil Service Bureau
Washim Street,
Riyadh, Saudi Arabia

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SYSTEMS PROJECT SUPERVISORS PROGRAMMING SUPERVISOR BIRMINGHAM

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EARNINGS PACKAGE:

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Our Client, a major British manufacturer, is developing a wide range of most sophisticated and technically advanced systems, using a variety of hardware dependant upon the project. IMS, Database, Datacommunications, Micros and dedicated Minis are being used. The Client requires candidates who can produce results. Experience of systems design, business analysis and/or programming is required. Leadership qualities will need to be demonstrated.

For further details and an application form phone or write to

Blackwood Associates, FREEPOST, Birmingham B20 1BR

All opportunities open to male and female applicants.
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GP House, 155 Hamstead Road, Handsworth Birmingham B20 2RL. Telephone: 021-523 4520 (24 Hours) or 021-551 2357

Have you considered working in Europe?



If you have a good IBM 370 background in Systems Programming, or TP/DB Applications Development, why not contact CDS to find out more about Working in Europe. We especially want to hear from applicants for these current project needs:

PL1 / CICS PROGRAMMER

To take on a new project for a DOS/VS client in the Netherlands. You should have good knowledge of using PL/1 with CICS and familiarity with a Database will be a benefit since the system uses TOTAL.

DOS/VS SYSTEMS PROGRAMMER

To join the above DOS/VS client's system support team. Within this 3 person group, you will be given the opportunity to gain experience in all aspects of the work. You should already possess sound knowledge of DOS/VS and have some CICS/VS background — familiarity with BAL would also be an asset.

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Our usual excellent remuneration is available for two programmers to work on an implementation project. You should have at least a year of Cobol experience and be reliable and capable of working with a minimum of supervision. As well as the many attractions of living and working in Europe's Capital City, attractive apartments with a private swimming pool are available.

For further details contact Jim Shaw at CDS, or on 0990 24546 evenings/weekends.

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PROGRAMMERS/SYSTEMS ANALYST

Join Data General's new
Software Applications Group

Data General is already firmly established as one of the world's foremost computer companies. Now, as part of our continuing programme to broaden the service to our clients, we are setting up a new Software Applications Group to be based at Hounslow.

We need two experienced programmers and one systems analyst, who will provide the springboard for the further development of the new group... so career prospects will be excellent. Ideally you should have telecommunication or commercial experience on minis, preferably in COBOL, or Assembler.

Systems Analyst

You will receive a salary around £8,900 (depending on your experience) plus a company car. Demonstrated ability and personal growth could lead to a Project Leader's position in just two years.

Programmers

You will receive a salary around £6,700. Unusually good opportunities for promotion to System Analyst are available within the Data General organisation. This is an excellent 'ground floor' situation with potential for advancement in the next year or two.

Phone or write to Clive Wright at the address below.

Data General

Data General Limited, 3rd & 4th Floor, Houslow House, 724/734 London Road, Hounslow, Middlesex, TW3 1PD. Tel: 01-572 7455.

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Working in close liaison with Systems Designers, you'll be a vital part of the marketing function. A Systems Programmer, you are probably 25-35 with a degree or equivalent qualification and ready to respond to the challenge of this demanding position.

Here is an opportunity to make a real impact within a compact and dynamic company which designs, manufactures and markets systems used in some of the biggest process industries, such as water and power, oil and metals, chemicals and pharmaceuticals.

As well as a competitive salary, there are full benefits, including relocation assistance, where appropriate, to Hertfordshire. So if you're interested in putting us in writing we'd like to hear from you.

 Wendy Vilgots, Personnel Department,
Kent Automation Systems Limited,
6 Hunting Gale, Hitchin, Herts. Tel. Hitchin (0462) 54801.
A member of the George Kent Group of Companies.

ADP

DOES YOUR COMPANY'S PROGRESS REWARD YOU? OURS DOES!

As our business grows throughout Europe, the opportunities within the Company grow with it, especially in the Software Development Department of Network Services division.
ADP Network Services is the timesharing division of Automatic Data Processing, the largest independent computer service bureau in the world.
The growth environment encourages career progression and rewards dedication and responsibility. We require:-

PROJECT LEADER - (M.I.S. Development)
Present Position - Senior Programmer or Analyst/Programmer (or equivalent).
Opportunity - Leading the team developing our European Management Information System.
Background - Accountancy/commercial systems using COBOL.
Reward - Up to £8,000 + benefits.

SENIOR PROGRAMMER - (Communications Software)
Present Position - Programmer or Communications Engineer (with programming experience).
Opportunity - Responsibility for maintenance of the network software and helping to determine its future growth.
Background - PDP11 or PDP8 or DEC10 + exposure or interest in telecommunications.
Reward - Up to £6,000 + benefits.

JUNIOR PROGRAMMER - (Software Utilities)
Present Position - Undergraduate DEC10 operator or trainee programmer.
Opportunity - Member of an international team responsible for supporting and maintaining DEC and ADP system software.
Background - Exposure to assembler (ideally MACRO 10).
Reward - Up to £4,500 + benefits.

The network now consists of 150 PDP8s and 11s throughout Europe and the States taking a service to clients based on 24 DEC System 10 configurations in London - Boston - Michigan. The service also includes several DEC 20 based client-sited systems.

All positions are based in London at our recently refurbished offices in Great Portland Street. Other benefits are four weeks holiday, family membership of BUPA, 24 hour medical coverage, life insurance and excellent pension scheme plus a challenging, secure, professional and lively environment.

Ring Nigel Bylton on 01-837 1355 or write to him at:

ADP Network Services Limited,
179-193 Great Portland Street, London W1N 5TB.

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The Company An expanding and profitable British-owned group engaged in the production and sale of fast-moving consumer goods, and with a substantial export turnover.

The Job Reporting to the Head of Finance, with responsibility for the management and further development of the company's data processing facilities which currently include both on-line and batch systems.

The Candidate An experienced data processing or project manager, male or female, aged 30-45, who has had experience of the design, development and implementation of on-line systems. Essential personal qualities are good organisational and communication skills, and the ability to control and motivate staff.

Relocation costs will be paid, and an executive car is provided. Brief but comprehensive details of career and salary to date, which will be treated in confidence, should be sent to E. H. Simpson, Executive Selection Division, Ref. S606 of the address below. Please include a daytime telephone number at which you may be contacted.

COOPERS & LYBRAND ASSOCIATES LTD.

Management Consultants
Shelley House, Noble Street, London, EC2V 7DQ.

Computer Operators

Solihull, West Midlands

The Midlands Region of the Central Electricity Generating Board in Solihull, has vacancies for computer operators. A 256K ICL 1904S is installed together with two front end processors and a 48K ICL 2504. Future developments include the installation of a large 2900 series configuration in a new computer room next year.

Salaries, inclusive of shift payments and on-call bonus, will be within the range £249-£5076 (under review).
If you have more than 8 months' operating experience on any equipment and want to join a developing installation please write quoting vacancy number CW18779MR and giving details of career history to date to the Personnel Manager, C.E.G.B. Midlands Region, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

 **CENTRAL ELECTRICITY GENERATING BOARD**
Midlands Region

NEWCASTLE-UPON-TYNE POLYTECHNIC

Computer Unit
Requires applications for the following posts. The unit provides a computing service for the teaching, research and administrative work of the Polytechnic and is linked to an IBM 370/180 at Nuffield and operates its own NOVA microcomputer terminal system. A new microcomputer system is currently being installed.

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To head the Programming and Advisory Services division and deputise on academic matters for the Director of Computing. 3 years' experience in computing, 3 years' experience in teaching experience with degree level qualifications required.

SENIOR SYSTEMS PROGRAMMER
(PO1 4-8)

To support a new multi-access computer system. Experience of systems programming with Datas/ or equivalent RJE Conditions: Manager: £7047-£1816 (incl.) - 1984 p.a. Currency under review.
Nuffield and Conditions: PO1 4-8 £5848 p.a. plus £1312 supplement. Currently under review.
For further details and application form please write to the Personnel Manager, Newcastle-upon-Tyne Polytechnic, Elswick Buildings, Elswick, Newcastle-upon-Tyne NE1 1ST.

Computer Officer POIC

£6,834-£7,551
including London Weighting

Brent uses a 1/2 MByte IBM 370/145 working under DOS/VS jointly with the London Borough of Ealing. We are looking for a Computer Officer with an Accountancy or Computer Technology qualification who will be responsible for liaison between the Council's user Departments and the Principal Computer Officer at the Computer Centre to ensure the development and smooth running of the Council's computer operations both financial and non-financial.

The current machine configuration includes 3340 and 3344 discs with both local and remote terminals. A Land and Property Database is being developed using DL1 and new Financial and Housing Management Systems are being implemented.

The Computer Officer will be required to advise top management upon company matters and to implement and maintain computer applications, including feasibility and cost benefit studies, of both the mainframe machine and Brent's Radion Seebeck Key-to-Disk Data Preparation system.

Generous re-location expenses available. 35-hour week. Flexible Working Hours. Interest-free loans for annual rail season tickets.

Application forms and job description from the Administration Manager, Room 708, Brent House, High Road, Wembley, Middlesex, returnable 9th July, 1979. Telephone 01-803 0371 (24-hour Answerphone Service). Reference Number F/82/JD must be quoted.

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£5000-£6000+
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We are a well-established Computer Bureau whose headquarters are based in Slough. We provide systems for a wide variety of applications including production control, stock control, product costing, payroll and ledgers etc.

The language used is mainly COBOL

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To lead teams of experienced systems programmers in developing new systems and maintaining and improving existing ones.

We are looking for at least 2 years leading project teams and at least 3 years' programming experience.

Systems/Programmers
To develop new systems within a project team, aiding in systems design and in some areas programming. A certain amount of maintenance and improvement work to existing systems will also be involved. We are looking for at least 12 months' system design experience coupled with at least 2 years' programming experience.

Programmers
To join a programming team - developing new systems also maintaining and developing existing ones.

PROSPECTS
Prospects for advancement through the company are excellent. Promotion is normally from within the company.

If you are interested in knowing more please telephone DAVE YODAN on Sheffield 30748 or 357014 to arrange a convenient appointment.

 **COGSON COMPUTERS LIMITED**

LONDON BOROUGH OF BROMLEY

SENIOR COMPUTER OPERATOR

(Ref. B.307)
Classical 2 £3800-£3882
+ 14% shift allowance

Applications are invited from experienced computer operators to assist in the running of the Council's ICL 1903/128K Computer with discs, magnetic tapes and a VDU terminal network operating under the George 3 system.

Further information regarding duties, shift and available from Operations Manager, Tel. 01-484 3333, Ext. 3344, Closing date 12th July.

Application forms from Assistant Chief Executive (Manpower), Town Hall, Bromley, Kent BR1 1BB, Tel. 01-484 3333, Ext. 3318.

RECRUITMENT ADVERTISING

SYSTEMS & PROGRAMMING CAREER DEVELOPMENT

Our client, a Berkshire based manufacturing company and part of one of the most successful groups of companies in Britain, has decided to implement a major plan for a wide variety of applications in both the manufacturing and financial areas.

The recently announced mainframe they intend purchasing will enable them to design and develop new real-time and database systems for the 1980s, embracing the most modern systems philosophies and the latest software techniques. To achieve this they require the following computer professionals.

COBOL PROGS to £6000

Although machine background is unimportant you should have 12 months' experience on a commercial mainframe. This position offers plenty of scope for career progression.

SYSTEM ANALS c£7000

To work within project team to develop a wide variety of applications. Database experience would be an advantage.

SNR SYSTEMS ANAL. c£8000

Required to lead project teams involved in the design and implementation of the above mentioned real-time interactive database systems.

The fringe benefits offered by this major international company are not only the usual four weeks' holiday, pension scheme and sick pay, but also include generous assistance with relocation expenses (where applicable) and a subsidised canteen, together with excellent sports and social facilities.

If you have outgrown your present position and need to join a company where ability is quickly recognised and rewarded by both remuneration and promotion to management or supervisory areas, this is probably just the boost your career needs.

For further information and application form, telephone us today in complete confidence quoting ref. PJ79663/3 on the following number:-

HEXAGON
computer services
145 WILSON STREET LONDON W1V 3TB

TEL 01-439 3671

International
Management &
Personnel Consultants
to High Technology

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LONDON & HOME COUNTIES

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Formed in 1968, our clients have become the largest independent suppliers of data handling equipment, and, since the recent introduction of a new and exciting range of communications systems, have emerged as a major force in the distributed processing market place.

This growth has resulted in the need for more sales executives with data processing experience to join their highly professional team.

Successful candidates will receive an attractive remuneration package including high basic salary, guaranteed minimum earnings for six months, on-on-quota income of £12,500, and potential rewards for in excess of this. They will also receive a company car plus expenses.

Our client offers full product training and support and all normal large company benefits including a pension scheme.

If you are currently selling successfully in any sector of the data processing industry please telephone for an immediate interview quoting ref. no. DF 79/1.

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Telephone 01-486 5644

I.M.P.C. (NORTHERN) LIMITED.
Austin House, Charlotte Street,
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Telephone 061 236 7026/7/8.

I.M.P.C. (IRELAND) LIMITED.
20 Upper Fitzwilliam Street, Dublin 2.
Telephone 0001 7663 87.
0001 7665 43.

INSIGHT MARKETING & PERSONNEL CONSULTANTS LTD.
72-75 MARYLEBONE HIGH STREET LONDON W1M 4AJ.

ICL 2960/72**CONTROL ROOM SUPERVISOR**(Ref. M.45)
£4,748-£5,133 p.a. (under review)**CONTROL ROOM ASSISTANT**(Ref. M.38)
£4,233-£4,647 p.a. (under review)**COMMUNICATIONS CONTROLLER**(Ref. M.30)
£4,748-£5,133 p.a. (under review)

In July of this year we are installing an ICL 2960 and during next year a 2972 will be installed. These will replace our existing dual 1900 systems at present running under George II+. Ours to an expansion in the organisation of our computer division, and internal promotion, we require the following people to handle the increase in work load:

Control Room Supervisor

Reporting to the Data Controller, the successful applicant will be required to supervise a team of three Control Assistants and a Media Librarian. Responsibilities will include the preparation of jobs submitted to the mainframe, the quality of the output, and ensuring that strict deadlines are met. Previous experience of this type of work is essential and a knowledge of George II/III operating systems would be advantageous.

Control Room Assistant

Reporting to the Control Room Supervisor, he/she will be required to assemble work for processing on the computers. This will include the booking in and out of work to the Data Prep and Computer Rooms, and ensuring that the jobs have the correct parameters and flowcharts etc. Some previous data control work would be an advantage especially if this was with an ICL mainframe.

Communications Controller

This is a new post within the Computer Division with overall responsibility for the operation of terminal equipment and the efficient use of the Post Office Communications network.

The Council's computer installation already has over 40 terminal devices installed and linked in via line scanners and a front end processor. During the summer of this year a new ICL 2960 computer will be installed and the existing networks (which are to be upgraded) will be transferred to the new machine.

A knowledge of telecommunications theory is necessary for this job and experience in the development of terminal networks is also required.

These posts are open to both sexes and all races.

We offer a substantial range of benefits including flexible working hours, generous annual leave and a subsidised staff restaurant. We are close to trains, buses and assistance with relocation expenses, if appropriate, will be provided.

Application form and further details obtainable from the Personnel Officer, Directorate of Management Services, London Borough of Lambeth, 18 Brixton Hill, S.W.2 or Tel. 01-274 7722, Ext. 3020. Closing date 13th July, 1979.

LAMBETH**Computer Aided Design**

for integrated circuits

Mullard Southampton is a leader in the dynamic world of the silicon chip; we design, develop and manufacture MOS integrated circuits.

One of our key areas is the Computer Aided Design activity which provides a support to our electrical development engineers.

We now offer you the opportunity to join us at the forefront of the micro-electronics world - we need someone (male or female) with programming knowledge and experience in a scientific application, preferably Fortran or Algol, to join our CAD team. The work is varied - ranging from creating systems to programming on a dedicated computer - a 128K word SEL 32/65 computer with Tektronix graphics.

You will probably have a degree in a relevant scientific subject with an appreciation of electronics and be able to demonstrate to us a practical aptitude in using computers.

Salary will depend on the experience you can offer us and there are excellent fringe benefits, including generous relocation expenses where necessary.

Our Southampton plant is situated on the edge of the New Forest and is close to the Solent with its attractive watersports facilities.

Please write with details of your qualifications, experience and current salary to: John Wells, Personnel Officer, Mullard Southampton, Millbrook Industrial Estate, Southampton SO9 7BH. Or telephone Southampton (0703) 775533.

Mullard Southampton**SITA**SOCIETE INTERNATIONALE DE
TELECOMMUNICATIONS AERONAUTIQUES

developing and operating the largest worldwide civil computer based data communication and message switching network for the air transport industry

looks for its Head Office in Paris

3 systems designers

These engineers will participate in the development of the SITA future automatic network (Advanced Network). Their work will involve the elaboration of functional and system design specifications for the following systems: Data Transport Network, Network Control Systems, Message Switching Systems, User Interface Systems.

The applicants should have:

A University degree, preferably with two years professional experience in the field of Computer Science and data telecommunication networks.

A good knowledge of real-time systems (real-time, hardware, software and data transmission systems (networks, protocols, equipment)).

Fluent written and spoken English is mandatory. A basic knowledge of French is desirable.

Please send full curriculum vitae and salary requirements to: SITA, Personnel Director, 112, rue de la Chapelle, 92022 Neuilly-sur-Seine, FRANCE.

**COBOL Programmers/
Team Leaders
to £7,500**IBM370/168 MVS & IMS
International Banking Systems

There are opportunities of joining a major reorganisation currently under way in the field of international banking systems.

Our Data Processing (International) Department is currently engaged in the conversion of Lloyds Bank International's Interlocks Systems to run on IBM 370/168 machines. A large volume of development work, both in the processing of complex banking transactions and in the production of management information, awaits the completion of conversion.

We are looking for experienced programmers trained in IBM COBOL with design/team leadership abilities. Initially they will join a team working on the conversion project, and will then become involved with development of new applications as the conversion is completed.

This is an opportunity to join a friendly department in a large Management Services Division. It offers an attractive salary, excellent career prospects, and the fringe benefits to be expected from a major financial institution.

If you would like to know more about these vacancies, or wish to apply for one of them, please telephone Alistair McC. Hall or Mike Clarke on 01-623 2522, or write to Alistair McC. Hall, Training Officer, Management Services Division, 78 Cannon Street, London, EC4P 4LN.

**Lloyds Bank****EXPERIENCED
EDP AUDITOR****INTERNATIONAL BANKING**

Considerable expansion is planned by our bank in the areas of data processing and telecommunications, and a number of projects will be developed over the next five years. To meet this challenge we need to strengthen our existing EDP audit team with an experienced EDP auditor.

The successful candidate will be a self-motivated EDP professional with at least two years' EDP audit experience, preferably in a banking environment.

The position will be within an established structure and will entail supervising pre-implementation and post-implementation reviews and data/telecommunications centre audits in London and Europe. It is envisaged that approximately six weeks a year will be spent abroad.

This is an opportunity to join a professional audit team which is about to go through a period of expansion. The successful candidate will also have the opportunity to keep abreast of technological changes through practical experience and training.

An attractive salary will be offered for this position, together with the benefits normally associated with a large bank.

Applicants, male or female, should write with career details to Bernard Fry, Assistant Auditor, Manufacturers Hanover Trust Company, International Audit, 2/3 Curator Street, London EC4P 4BB.

**UNIVERSITY OF SURREY
COMPUTING UNIT
APPLICATIONS PROGRAMMER**

During the summer this year the Department is installing an integrated system of linked Prime computers - the most advanced and powerful multi-access Prime system in Europe.

Applications are invited for the post of Applications Programmer within the Computing Unit and the successful candidate will be expected to work on the development of software for the new system.

The salary will be on the Computer and Other Related Staff Scale up to £7,145 (£7,521 from 1 October, 1979) plus generous annual leave.

Further particulars can be obtained from the Deputy Secretary (Personnel), University of Surrey, Guildford, Surrey GU2 5XH, telephone 0424 71281.

Applications should be sent to the Personnel Officer, University of Surrey, Guildford, Surrey GU2 5XH, telephone 0424 71281.

Geac**FIELD ENGINEERS: LONDON**

£58.0K + CAR

Due to continued expansion Geac Computers Limited require experienced Computer Engineers to work on the range of computers in the London area.

Training on the Geac produced processor and peripheral equipment will take place at the company's offices in Canada and Bristol.

A working knowledge of COC 9748 and 9765 direct data products, printers, Fabrik memory, and other peripheral drives would be desirable, however, a proven track record in computer field engineering would be equally considered.

Applications in writing or telephone to:

Brian Newson, C.E. Manager
GEAC COMPUTERS LIMITED
Hamilton House, 80 Stokes Croft, Bristol
Tel. 0272 428511

MYRIAD**PROGRESS
TO
PROJECT LEADERSHIP****READING**

These positions will appeal to persons who have gained a sound technical background and now feel ready to progress their careers into a project leading role holding total system development responsibility.

A successful manufacturing organisation with operations throughout Europe is currently undertaking major development of financial and administrative systems and is therefore able to offer outstanding opportunities for experienced Analyst/Programmers seeking a senior position within a dynamic information systems department. Development will make extensive use of a sophisticated European data communications network with emphasis being placed upon on-line systems.

Established in 1957 the company has maintained a progressive annual growth rate enabling it to offer exceptional career progression to professional staff. The persons appointed will find these positions to be first-class opportunities to gain and apply valuable experience in all aspects of commercial data processing working to high standards. Situated in Reading, well-served by public transport and easily accessible by car, the company offer a range of fringe benefits including relocation expenses where appropriate.

Ref. SW2/2806

MYRIAD APPOINTMENTS LIMITED

30 Fleet Street London EC4Y 1AA

01-353 0981 24 HRS.

**Bring your
OS experience
to MVS/JES 2
in Berkshire
for up to
£7800 + CAR**

A superb opportunity occurs with an international company, located in Berkshire. Our clients utilise a major IBM mainframe running under MVS/JES2 and TSO, forming the base for extensive development of a large overseas on-line network.

To help them realise this potential a rare opening occurs for a

SYSTEMS PROGRAMMER

Are you a Systems Programmer working in an IBM OS environment with sound ASSEMBLER experience? Then our clients can offer you a challenging position involved in the support and enhancement of the MVS operations system and of TSO plus the evaluation of other software products to assist this fast growing installation.

In addition to a salary to £7,800 and a Company CAR, there are first class benefits of free BUPA, non-contributory pension, superb working conditions, including an excellent subsidised restaurant.

This requirement is urgent, therefore please contact for further details REX SCOONES at Capp Associates Croydon Office, quoting ref: CW 156-9S

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LONDON AND MANCHESTERComputing
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Association**01-686 9693**
A.M.P. HOUSE, DINGWALL RD.,
CROYDON, CR9 2AU

British Waterways Board

Computer Centre Wembley

We are currently involved with 24 Computer Applications, encompassing the many and varied interests of the Board. They range from Water Control to Warehousing, Plant Utilisation to Credit Licensing, as well as normal Payrolls, Ledgers, etc.

We have outgrown our present configuration, which is now being replaced with the new Burroughs "B2800" series of Computers.

This exciting new development will enable us to develop a terminal network to cover all our administrative centres in England and Scotland. The network will be channelled through a "front-end" processor linked to the main frame, which will also multiprogram our existing batch work, in single shift working.

Applications are therefore invited for the following posts:

Senior Analyst/Programmer (Cobol)

(Salary range £6825-£7305 p.a.)

Analyst/Programmer (Cobol)

(Salary range £5951-£6693 p.a.)

These are senior posts within the Board's organisation and applications should state full details of all previous experience in the computer field.

Apply to Principal Personnel Officer, British Waterways Board, Willow Range, Church Road, Watford, Herts. WD1 3QA.

SWITZERLAND

An international financial institution located in the German part of Switzerland, has an opening for a

DEPUTY SYSTEM SOFTWARE SUPERVISOR

The right person will have several years' experience as a systems programmer and a detailed knowledge of on-line systems, DOS/VSE, POWER, VSAM, CICS and Assembler. A knowledge of VM/370 and DL/I would also be desirable. Candidates should have English or French as mother tongue and a good knowledge of German.

Salary commensurate with experience, first-class pension and welfare schemes and other ancillary benefits. Staff restaurant, own Sports Centre.

Please apply in writing, enclosing curriculum vitae, copies of testimonials and recent photograph to: V.03-999999, Publicitas S.A., CH-8021, Zurich, Switzerland.

UNITED HEATING SERVICES GROUP

require a

DEPUTY DATA PROCESSING MANAGER

SALARY RANGE: £6750-£8000 dependent on experience

The computer installation consists of an ICL 2904 and 2903 and is currently undergoing considerable development with the implementation of 7502 local end remote terminal based systems.

The job will be to take control of the day-to-day running of the Operations section, including liaison with both hardware and software suppliers. This is a challenging position with a forward looking company which is expanding rapidly.

Applications are invited from people currently employed as Operations Manager/Supervisor or Chief Operator who have at least five years' D.P. experience, 18 months of which have been at supervisory level. A sound knowledge of ICL software and hardware is essential.

Please apply in writing giving a brief description of your career to date to:

Mr. T. Campbell, Data Processing Manager
UNITED HEATING SERVICES LTD.
43-47 Homedale Road
Bromley, Kent BR2 9LF

FORTRAN

Programmer with scientific background, Bedford based, travel involved. Ref. B/069.

S/ANALYST

Systems Designer with good commercial background, IBM installation in Dunstable, Beds. Ref. B/081.

BASIC +

Programmer with 8-18 months' experience. Knowledge of RISTOS Best Beds. company. Ref. B/080.

COBOL

IBM/ICL or UNIVAC exp. programmer, substantial programming background. M. Keynes. Ref. B/079.

DAYS ONLY

Shift Leader, ICL George II knowledge, good JCL experience. Bedford company. Ref. B/077.

RPG II

Programmer with 8-18 months' exp. Sys. 3, JCL, exp. banking benefit. London, City, EC3. Ref. B/074.

ASSEMBLER

Programmer with exp. of VOU or VRC systems. Some travel involved. Bedford base. Ref. B/073.

ALGOL/COBOL (or some Fortran)

Good Programmer with possibly some analysis exp. technical applications. Bedford. Ref. B/070.

Applicants should telephone or write to:

X.CALIBUR
Duke House, 2 Duke Street, Bedford
0234-46677

Computing Services Association
Agency Licence SE(A) 3346

X-Calibur

CONTRACT SERVICES

Computer Operator Wilmslow Cheshire

Circa. £3000 p.a.

British Industrial Sand Ltd require an experienced operator to join a small team within the Computer Department.

The installation is situated in pleasant modern offices in the centre of Wilmslow and consists of an ICL 1902T (80K) using GEORGE 2 operating system on a single shift. Extensive development is in progress which involves a large online network using ICL 7502 terminals.

The position carries the usual benefits expected from a large company. Free transport will be arranged for Congleton residents.

Please apply, giving details of your career to date—

Mr P. N. Stubbs,
Computer Operators Controller,
British Industrial Sand Ltd.,
St. Ann's House, Parsonage Green,
Wilmslow, Cheshire.

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£240 p.w.

01-262 2251

Contract Programmers-Analysts

If you are thinking of doing contract work why not start here by registering now for immediate and forthcoming requirements.

For further details contact:
Bridget Kotchie

RENDECK LTD, 100 New Bond St.
London W1. Tel: 01-629 5438

Rendek

Are you as good with people as you are with computers?

Data training - in the past 8 years has become one of the largest and most successful computer training companies in the UK. The high standard of our courses has attracted companies in all spheres - corporations, government departments, local authorities and computer bureaux.

The number of students attending computer courses is continually increasing, which is why we need Programme to join our Lecturing Staff now.

In addition to looking for experienced programmers we also seek a programmer with specific ICL 2900 experience who wants to use his/her skills to get involved in a rapidly developing area of computers.

You should be mature with the ability to talk to people, communicate your skills and experience - clearly and succinctly.

After an initial training period your work will be split between delivering courses, compiling reports, visiting students, installations and ensuring the training courses are as developed, comprehensive and practical as possible.

You'll enjoy an excellent salary between £5,500 to £8,000 with an annual bonus and monthly commission based on profits. Above all you will enjoy the challenge and reward which is part of an instructors life and the satisfaction which can be derived from a successful class of students.

If you think you are as good with people as you are with computers, we'd like to hear from you.

Ring up to 8.30 p.m. for further information and to arrange an interview.

LONDON:
Gill Sturmont,
Assets House,
17 Elverton Street,
London S.W.1.
01-828 2282.

**Data
Training
Ltd**

Computer Manager -Operations

c. £7,500

Berkshire

Clark-Eaton are leading glass merchants and glazing contractors with their Headquarters at Bracknell in Berkshire. They are now seeking to fill the new appointment of Computer Manager - Operations, in their established installation. The main responsibility of this appointment will be to manage a Honeywell Level 64 computer with communications devices, data preparation using Recision Seecheck and a variety of clerical functions.

Applications are invited from experienced Managers, male or female, capable of dealing with staff at all levels and scheduling resources in a multi-systems environment. The prerequisite is a good management ability. The salary is negotiable, £7,500. Other benefits include 22 days holiday, contributory Pension Scheme and free life assurance. Where appropriate there will be help with housing/relocation expenses.

For an application please write or telephone Mrs. Judy Cowan, Jemee Clark & Eaton Ltd, PO Box 19, Southern Industrial Area, Bracknell, Berkshire RG12 4UU. Tel: Bracknell (0344) 24733.

CLARK C

Borough Treasurer's Department

Senior Computer Operator

£4,454-£4,776 p.a. incl. of shift allowances (Phase IV salary award expected from 1st July, 1979).

We need two experienced Operators (male or female) to be Shift Leaders for our I.C.L. 1902T installation operating under the GEORGE 2+ system for alternating shifts covering the daily period from 7 a.m. to 9.30 p.m. Monday to Friday only (38-hour week).

You should have a minimum of 2 years' experience, preferably on I.C.L. 1900 equipment. In the summer of 1980 the Council will take delivery of an I.C.L. 2900 computer operating under VME/B, for which formal training will be given in due course.

Application form from the Controller of Personnel Services, Town Hall, Forest Road, London E17 4JF. (Tel. 01-631 6899, 24-hour answering service).

Closing date: 13 July. Please quote Ref. B.2378.

London Borough of
**Waltham
Forest**

COMPUTER PROFESSIONALS AS THINKERS

— £5,500 TO £8,500+ — BERKSHIRE-BASED — EUROPEAN TRAVEL —

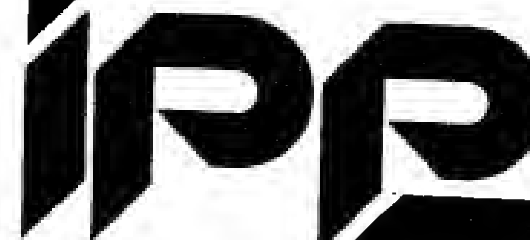
* GENEROUS OVERSEAS ALLOWANCES *

THINK of all the most stimulating development areas within the Commercial D.P. world. THINK of Database Management, Teleprocessing Systems, the latest techniques in Financial Modelling and Manufacturing Systems.

THINK of the whole range of ICL hardware, Pre- and Post-Sales Support and of how your proven experience in Systems or Programming can be used throughout EUROPE with a leading Software House. Above all, THINK of yourself, your career and how quickly you personally could progress in such a fast moving environment.

CONTACT ROLAND JONES ON 01-603 7335

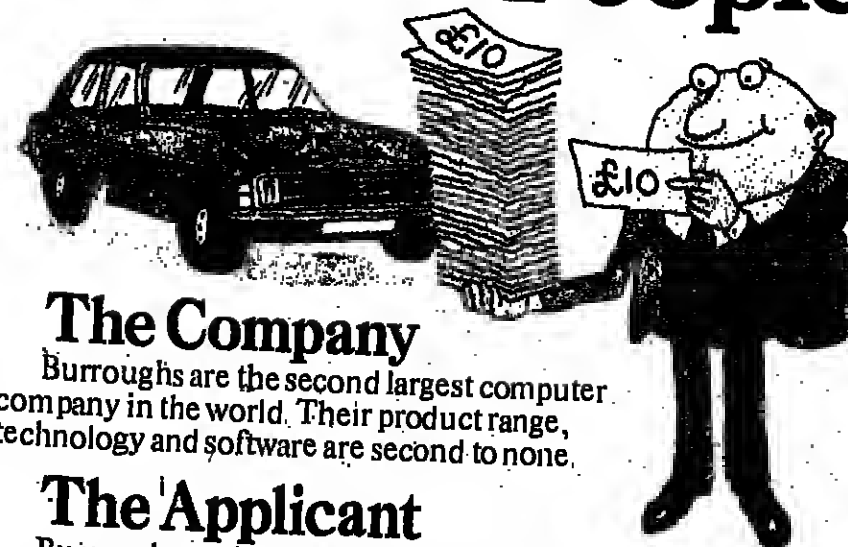
REF. RJ2001



Information Processing People

58 Pembroke Road, London W8. Telephone (24 hours): 01-603 7335/6. Telex: 261298

Burroughs want Systems People who want Money



The Company

Burroughs are the second largest computer company in the world. Their product range, technology and software are second to none.

The Applicant

Burroughs are looking for ambitious systems people and consultants who have knowledge of computer systems and experience of the computer industry and who want to be involved with a large manufacturer in the forefront of technology.

You should know your business but be prepared for more training. You will have appropriate professional qualifications, strong personality, an analytical mind, determination to succeed and be aged between 23 and 30.

The Job

The opportunities we are offering open up a challenging career path in Account Management. The job entails supporting major

users of Burroughs equipment, technical selling, and planning and implementing all stages of systems development.

The Rewards

After initial training and experience successful applicants should expect to be earning a five figure salary and qualify for a company car, together with all the other big company benefits.

The Area

Immediate opportunities exist throughout the country. Burroughs have over 50 offices in the UK, many of them devoted to supporting users of our larger systems and networks.

The Future

The future is what you make it. Burroughs has marketing and manufacturing operations in 120 countries worldwide, and promotion from within is usual - which all adds up to a world of opportunity. So if you want more than just a job write to: Mr. Bill Horgan, Burroughs Machines Limited, Heathrow House, Bath Road, Hounslow, TW5 9QL. Or telephone Mrs. Pat Dobson on 01-236 0793.

Burroughs

1.50

Go-ahead Programming and Systems People for Customer Support and Technical Consultancy

Move your career into top gear

£5000-£9000 basic

London Birmingham Manchester Leeds Sheffield

1979 has seen a continuation of ICL's record of rapid growth, with half-year results showing an impressive 23% increase in turnover. One of the major reasons for this success is the quality of the service provided to our customers by our front-line technical support teams.

Our commitment to further expansion means that we now have opportunities for DP professionals with the drive and energy to develop their careers in one of the most exciting and professionally stimulating environments in the computer industry.

Work Variety

The work is demanding and will not appeal to those who want a 9-5 routine. The responsibilities include:

Customer Support Providing technical solutions to customers' business problems and ensuring that the best use is made of ICL products and services.

Implementation Successful implementation of ICL products—hardware and software—on customer sites.

Technical Consultancy Development and application of highly specialised skills in areas such as database and communications.

Early Responsibility

You would be joining a successful team where morale and commitment are high. One of the reasons for this is that, although part of a large organisation, you get the real responsibility and personal recognition which come from working in small teams. You also benefit from the stimulation of working alongside some of the best DP professionals in the industry.



Training and Career Development

But perhaps one of the greatest attractions is the enormous scope for career development. Work experience is backed up by formal training to develop the technical and personal skills which we recognise are vital to our future success, as well as your own.

As you might expect, our standards are high—we are looking for technical excellence coupled with the personality and communication skills which will enable you to fit into a team and establish good working relationships with customers. Ideally you should have the following background/experience:

- Good quality systems or programming experience
- Communications, operating systems, database or other systems software
- ICL 2903, System 4, 1900 or 2900 systems
- Education to at least 'A' level standard
- Age under 30.

There are openings throughout the UK and we will be holding interviews over the next two weeks so contact George Battersby now—either by telephone on 01-788 7272 ext 4179 or write to him—brief career details are sufficient—at ICL Recruitment Services, 93-99 Upper Richmond Road, London SW15 2TG. Please quote reference CW 1416.

ICL International Computers
think computers—think ICL

LONDON BOROUGH OF BROMLEY SENIOR PROGRAMMER/ANALYST

Salary up to £6,381 p.a. Ref: B.363

A Programmer with at least 2 years' experience, and forward training in COBOL. A knowledge of PLAN would be an added advantage.

The INSTALLATION consists of an ICL 1903T 128K computer with disc and M/tepas running under the George 3 Operating System which supports an on-line teleprocessing and MOP service during prime shift in addition to batch processing and a remote job entry Key-to-Disc data preparation service.

The WORK involves supervision of junior programmers, the development of on-line T.P. systems and maintenance of existing batch systems until redeveloped. Future development plans and hardware requirements are currently under review. A Database Management system, and Structural Programming techniques are now being implemented. Starting salary will be commensurate with age, experience and qualifications up to the maximum quoted.

ADDITIONAL BENEFITS INCLUDE: Flexible working hours; excellent annual leave; assistance with relocation expenses; interest free rail ticket loans; canteen and social club facilities.

LOCATION: BROMLEY, KENT which is on the outskirts of Greater London, primarily residential and on the fringe of the green belt and Kent countryside.

Further information regarding duties, etc., available from the Computer Development Manager, Tel. 01-484 3333, Ext. 3285. Application forms from Assistant Chief Executive (Management), Town Hall, Bromley BR1 1SB. Tel. 01-484 3333, Ext. 3315.

LONDON BOROUGH OF BROMLEY

Documentation Officer

£4566-£4953 p.a. Inc. (under review)

A new post within the Polytechnic's Computing Services, offering the challenging opportunity to develop an extensive user documentation service. Liaison with computing services staff, teachers, external agencies and users at all levels of ability will be essential in order to determine and write effective documentation for the operation of software packages.

A degree-level qualification in computing followed by, together with some evidence of journalistic ability in the computer field. Experience of word-processing, computer typesetting, document design or teaching would be advantageous. Please write quoting ref. 4.3D for full details and an application form, posting first-class to: Appointments Office, Middlesex Polytechnic, Bourne Green Road, London N11 2NO. Closing date July 5th.

Middlesex Polytechnic

Systems Analyst / Programmer

Salary: £4,866 to £5,763 (pay award pending)

Programmer / Operator

Salary: £3,927 to £4,827 (pay award pending)

These two vacancies in the Borough Treasurer's Department at the Town Hall arise from promotion of the previous post holders to more senior positions in the developing Computer Section, responsible for all the Council's data processing work on their ICL 2903 installation.

Experience of local government; ICL 2903 and COBOL is desirable for these positions. Housing may be available in approved cases, and a generous relocation scheme is currently in operation. Further details and application forms available from Carol Lee, Personnel Section, Town Hall, The Parade, Epsom, Surrey, or phone on Epsom 26252 ext. 337. Closes: 13 July, 1979.

EPSOM & EWELL

SMR Sales & Marketing Recruiters Ltd

SALES EXECUTIVES

The most difficult thing in the world is to be objective about yourself. This is particularly relevant when considering a new job. It is hard to know what the alternatives are in the context of your existing experience and capabilities, possible career development, and potential employers, whether you are presently or potentially a salesman.

We are the only company in the Computer Industry providing sales training, market research, product promotion and sales recruitment services. We understand the problems. We are aware of the opportunities. We are the experts. MR. TRADER SAYS SO! With apologies to Rickenbacker.

Contact us anytime

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TRAINING, PROMOTION, RESEARCH, RECRUITMENT

URGENTLY REQUIRED DATA COMMUNICATIONS SALES EXECUTIVE

We are recruiting for a rapidly expanding European manufacturer and supplier of data communications products.

Their products have consistently proved to be **competitive, reliable and versatile** with computer installations throughout Europe.

Our client sees "data communications as a total concept," and that one of their prime objectives is to "provide a network that offers minimum complications and maximum facilities."

They are now seeking to recruit a **self motivated, adaptable sales executive** who is resident North of the Thames, with either Data communications experience or printer, V.D.U. and related product experience to O.E.M. and End Users.

THE REWARDS?

- ★ A very attractive basic salary negotiable around £7,000 p.a.
- ★ A realistic quota of £350,000 p.a. to give total earnings of £16,000 p.a.
- ★ A 2 litre car of your choice.
- ★ Non-contributory Pension Scheme.
- ★ Free medical and Permanent Health Scheme.

Interested?

Then contact Dennis Hall on 01-838 8721 or Goudhurst 211773 (evenings/weekends).

DGH
recruitment services

MICROCOM-PUTER SALES STAFF

Experienced sales personnel with knowledge of hardware and software required for our expanding West End showrooms. Excellent salary and commission for right people.

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COBOL PROGRAMMERS

London & S.E. England
Salaries to £7,000

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(recruitment consultants)
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THE SALES AND MARKETING BIT

Keep tabs on competitors

ONE of the most important factors in winning an order is the possession of complete understanding of all aspects of competitive products. It is not possible for the salesman to sell effectively if he doesn't know what he is competing against, nor is it possible for sales management and marketing people to plan their strategies effectively in isolation from the activities and capabilities of their competitors.

Yet salesmen and management alike generally give little or no attention to the maintenance of records on all products which might bring about the loss of new and existing business. Many sales managers go through the motions of establishing such systems, but once faced with the reluctance of salesmen continually to provide up-to-date information, allow this essential source of data to disintegrate into no more than a file for the occasional brochure which happens to drift into the sales department.

This situation usually exists because the sales manager has not made it clear to his salesmen (or doesn't understand himself) why this system is an essential factor in sales and marketing success. If one accepts that the salesman is selling a solution to a problem based on a number of agreed benefits and advantages, then it stands to reason that competitive salesmen are doing the same thing. The only way the salesman can ensure that a particular emphasis is placed on the areas of relevant benefit unique to his company's product, is to know what the competition will offer, what are the principal features and benefits claimed and the business methods of individual competitors.

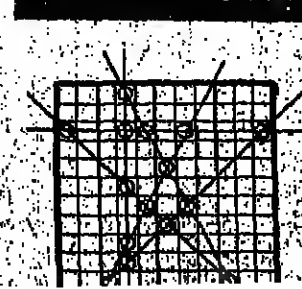
This in turn depends on acceptance by salesmen that the collection of competitive information in the field is just as much a part of their normal day-to-day operation as prospecting and call-reporting. This information is also essential to sales management, not only in the establishment of a selling strategy which can exploit market opportunities based perhaps on direct product superiority, or gaps in opposing product ranges, but also in order to be able to supply sales support which is relevant in the light of competitive activity.

Marketing people must have a total knowledge of all aspects of competitive products from new product ranges to the release of new features, perhaps augmented with the occasional "market whisper" about new products soon to be released. Whatever their formal procedures might be there is no form of market research which is as effective for unearthing new product revelations as a sales force committed to gathering competitive data.

It is not unknown for investment to be made in new products which subsequently never get off the ground. On the other hand, they do say that salesmen are the easiest people to sell to.

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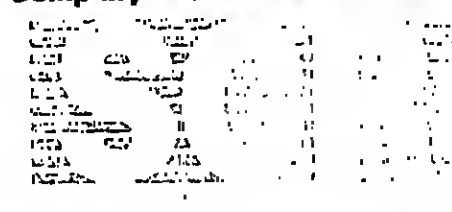
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